



E-ISSN: 2789-1623  
P-ISSN: 2789-1631  
IJRP 2023; 3(1): 16-18  
[www.psychiatrypaper.com](http://www.psychiatrypaper.com)  
Received: 20-04-2023  
Accepted: 01-06-2023

**Dr. Rudra Dinesh Kumar**  
Department of Clinical  
Pharmacy, Vaageswari College  
of Pharmacy, Karimnagar,  
Telangana, India

**Dr. Shravan Kumar Dholi**  
Department of Clinical  
Pharmacy, Vaageswari College  
of Pharmacy, Karimnagar,  
Telangana, India

**Dr. M Srinivas Reddy**  
Department of Pharmaceutical  
Chemistry, Vaageswari College  
of Pharmacy, Karimnagar,  
Telangana, India

**Srigadi Goutham**  
Department of Pharmacology,  
Vaageswari College of  
Pharmacy, Karimnagar,  
Telangana, India

**Shital Ade**  
Department of Clinical  
Pharmacy, Vaageswari College  
of Pharmacy, Karimnagar,  
Telangana, India

**D Ruchitha Reddy**  
Department of Clinical  
Pharmacy, Vaageswari College  
of Pharmacy, Karimnagar,  
Telangana, India

**C Vasavi Reddy**  
Department of Clinical  
Pharmacy, Vaageswari College  
of Pharmacy, Karimnagar,  
Telangana, India

**Correspondence Author:**  
**Dr. Rudra Dinesh Kumar**  
Department of Clinical  
Pharmacy, Vaageswari College  
of Pharmacy, Karimnagar,  
Telangana, India

## Heatstroke: Most hazardous condition in summer

**Dr. Rudra Dinesh Kumar, Dr. Shravan Kumar Dholi, Dr. M Srinivas Reddy, Srigadi Goutham, Shital Ade, D Ruchitha Reddy, C Vasavi Reddy**

DOI: <https://doi.org/10.22271/27891623.2023.v3.i1a.39>

### Abstract

Beyond 40 degrees Celsius, the core body temperature can cause psychological anomalies like delirium and coma. Heatstroke, often called sunstroke or heatstroke, is the most severe form of hyperthermia or a sickness brought on by high heat. Death, organ failure, or brain damage can result from heat stroke. It's possible to think of heatstroke as a tropical form of neurodegeneration, especially among unfamiliar visitors to warm climates. Incidence rates for various heat illnesses in women ranged from 1.30 to 2.89 per 1000 persons per year and 0.98 to 1.98 per 1000 person-years, respectively, compared to men. By the year 2050, the annual baseline number of deaths from heat stroke is expected to have increased by nearly 2.5 times from its current level. Nearly 21.7% of elderly patients contacted emergency departments due to heat stroke. Wearing loose-fitting clothing, using wet towels, taking showers, avoiding engaging in excessive physical activity outside in hot and hazardous weather, and staying hydrated are a few ways to prevent heat stroke. From 2006 to 2010, there were 3332 deaths attributed to heat stroke.

**Keywords:** Sunstroke/heat stroke, hyperthermia, death, organ failure, brain damage

### Introduction

Heatstroke is the most severe condition in a spectrum of illnesses progressing from heat exhaustion to heatstroke, in which a shared finding is hyperthermia<sup>[1]</sup>. Mainly two systems for the definition/classification of heat stroke are available, namely Bouchama's definition and the Japanese Association for Acute Medicine criteria:

### Bouchamas definition

The most frequently used definition of heat stroke worldwide is the temperature that rises above 40 °C, accompanied by hot dry skin and central nervous system abnormalities, such as delirium, convulsions, or coma.

### Japanese association for acute medicine criteria

According to the Japanese Association for acute medicine criteria heat stroke is defined as patients exposed to high environmental temperature who met one or more of the following criteria:

1. Central nervous system manifestation (impaired consciousness with a Japan Coma Scale score of  $\geq 2$  cerebellar symptoms, convulsions, or seizures).
2. Hepatic/renal dysfunction
3. Coagulation disorder

The modified JAAM heat stroke definition included patients exposed to high environmental temperature and meeting at least one of the following criteria:

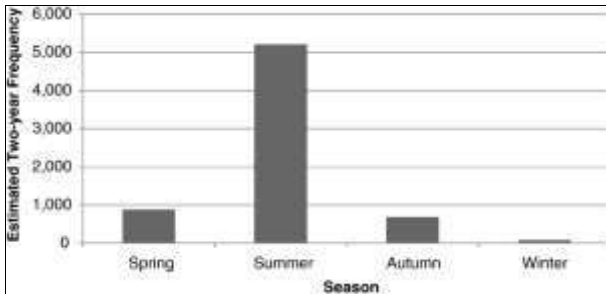
- I. Glasgow Coma Scale (GCS) score of  $\leq 14$ ,
- II. Creatinine or total bilirubin levels of  $\geq 1.2$  mg/dL,
- III. JAAM DIC score of  $\geq 4$ <sup>[2]</sup>.

### Epidemiology

The estimated annual incidence rate of heat stroke was 1.34 visits per 100,000 population (95% CI = 1.23-1.45). Over one-fifth (21.7%) of emergency department visits for

heat stroke was made by patients aged 70 years and older [3]. There have been at least 3332 deaths attributed to heat stroke from 2006 to 2010 in the USA [2] By the 2050s, heat stroke-related deaths are expected to rise by nearly 2.5 times the current annual baseline of Approximately 2000 deaths [2].

The incidence of other heat illnesses in women compared with men ranged from 1.30 to 2.89 per 1000 person-years versus 0.98 to 1.98 per 1000 person-years [4].



**Fig 1:** Estimated two-year frequency of emergency department visits for heat stroke by season, United States, 2009 and 2010

**Pathophysiology**

The pathophysiology of the heat stroke involves an intense heat overload followed by a failure of bodies’ thermoregulatory mechanism [4]. Excessive heat denatures proteins, destabilizes phospholipids and lipoproteins, and liquefies membrane lipids, leading to cardiovascular collapse, multi-organ failure, and, ultimately, death [5].

As the body temperature increases, active sympathetic cutaneous vasodilation increases blood flow in the skin and initiates thermal sweating [1]. Cutaneous vasodilation causes a relative reduction in intravascular volume, leading to heat syncope. The loss of salts and water through sweat induces dehydration and salt depletion [2]. Further loss of salt and water impairs thermoregulation followed by the reduction of

visceral perfusion due to shunt from the central circulation to the skin and muscles, resulting in organ failure. Therefore, heat stroke is a condition of multiple organ failure caused by a hot environment [2].

**Prevention**

**Some of the following steps are essential for the prevention of heat stroke**

Drink plenty of water or other cool, non-alcoholic fluids even if you’re not thirsty (check with your doctor if you are on limited fluids or fluid pills.) Avoid drinking extremely cold liquids as they can cause stomach cramps [7-8].

- Eat smaller meals more often and cold meals such as salad.
- Wear light-coloured, loose-fitting clothing made from natural fibres like cotton and linen [8].
- Keep yourself cool by using wet towels, putting your feet in cold water and taking cool (not cold) showers.
- Check in on older, sick and frail family, friends and neighbours who may need help coping with the heat. Call them at least once a day on any extreme heat day [8].
- Never leave children, older people or pets in cars [9].
- Take additional precautions when exercising or working outdoors. The general recommendation is to drink 24 ounces of fluid two hours before exercise, and consider adding another 8 ounces of water or sports drink right before exercise. During exercise, you should consume another 8 ounces of water every 20 minutes, even if you don't feel thirsty [9].
- When working or exercising outside in hot, humid weather, wear a hat and loose, lightweight, light-colored cotton clothing [10].
- Wear sunscreen. A sunburn reduces your body’s ability to cool down. It can also dehydrate you [10].



## Conclusion

Prevention of heat stroke is more effective than treatment and is certainly easier. Heat stroke related death is preventable through immediate recognition of symptoms, core temperature assessment, and rapid treatment via cold water immersion. Cooling methods for preventing HS in conditions with limited resources include moving the patient to the shade, removing excess clothing and initiating active cooling with either cold water immersion or ice water slurry packs to the groin and axillae.

## References

1. The new England journal medicine, review article, Dan L. Lango, MD, Editor, HEATSROKE – Yoram Epstein, Ph. D, and Ran Yanovich, Ph.D
2. Journal of intensive care [2018], HEATSROKE, Toru Hifumi, Yutaka Kondo, Keiki Shimizu and Yasufumi Miyake
3. <https://www.ncbi.nlm.nih.gov> article > PMC5005673>
4. <https://en.wikipedia.org>
5. <https://www.medscape.com>
6. CAQ review, Exertional heat stroke – Chelsea S. Navarro, MS, ATC, LAT, CES; Douglas J. Casa Ph.D, ATC, FNAK, FACSM, FNATA. Luke N. Belval, MS, ATC and Nathaniel S. Nye, MD, CAQSM
7. Heatstroke – predictable, preventable and treatable – Tom P. Moreau,MS,PA-C; Michealdeeter, MMS, PA
8. <https://www.betterhealth.vic.gov.au>
9. [www.Intermaintainhealthcare.org](http://www.Intermaintainhealthcare.org)
10. [www.my.clevelandclinic.org](http://www.my.clevelandclinic.org)

### How to Cite This Article

Shafti SS, Singh J. Floating hip: A unique pattern of injury. International Journal of Research in Psychiatry. Yy;vol(issue):pp.

### Creative Commons (CC) License

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International (CC BY-NC-SA 4.0) License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.