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KELVIN CHNG



Majority of heat injury patients at SGH are young adults: Study

Two-thirds of the 426 cases are between the ages of 18 and 39, and are mostly male

Shabana Begum

When Professor Marcus Ong, a senior consultant at Singapore General Hospital (SGH), looked into patient records from 2008 to 2020 to learn more about the characteristics and trends of heat-related injuries in Singapore, the findings surprised him.

He was expecting the bulk of the more than 400 patients to be seniors or children, who are particularly vulnerable to heat strain. Instead, two-thirds of the patients were young adults, mostly male, between the ages of 18 and 39.

Many of these young adults were exercising, and the main causes of heat illnesses were exertional. A number of them could be outdoor workers too, added Prof Ong, who is also director of Duke-NUS Medical School's Health Services and Systems Research programme.

Moreover, more than 200 of the cases happened on Sundays and in December, which is one of the cooler months in Singapore.

He explained that heat strain is driven not just by weather, but also by a person's attire and activity. Singapore is also highly humid all

year round, which affects thermal comfort.

Prof Ong presented these findings at a climate change and heat health seminar at Duke-NUS Medical School on Jan 26. The study was conducted in 2023.

There is little clinical data on the number and prevalence of heat-related illnesses here, he said.

With the help of data scientists at Duke-NUS, he uncovered 426 patients between 2008 and 2020 who had been rushed to SGH's emergency department with illnesses such as heatstroke, heat exhaustion and heat cramps. This is about 25 to 40 cases a year.

"We realised that there were a lot of major sports events that happen in December – marathons and even outdoor concerts," Prof Ong said.

Prof Ong, who has helped provide medical support at marathons and mass runs, said he has seen a few participants running in onesies and character costumes, instead of proper exercise attire.

"That's really crazy. It's fun, but you can imagine, you feel hot just wearing a suit. Then you try to run in it."

People may also have the tenden-

Researchers aim to develop smart systems to fight warmer nights

When local climate change projections for 2050 and the end of the century were released in early January, forecasts of more frequent days with temperatures exceeding 35 deg C dominated the headlines.

But climate and health researchers were equally, if not more, concerned about how warmer and humid nights will be a daily reality by 2100.

By 2050, at least 317 nights are expected to be warm, with temperatures at 26.3 deg C and above, the third national climate change study has revealed.

"A poorly rested person over time can never be healthy and productive. We need to have scalable and sustainable solutions to ensure proper rest. Without proper recovery, more problems ensue," said Associate Professor Jason Lee, director of the Heat Resilience and Performance Centre at the National University

of Singapore's (NUS) Yong Loo Lin School of Medicine.

"I want to focus on the more warmer nights prospectively. This aspect is often neglected (in heat health research)."

Over the next several months, Prof Lee and his team at NUS, alongside partners from the Berkeley Education Alliance for Research in Singapore (Bears), will be tracking the sleep quality of construction workers in non-air-conditioned dormitories and residents in air-conditioned bedrooms. The latter will be conducted in a laboratory setting.

The aim is to develop novel cooling solutions in dorms and bedrooms at homes to ensure that the rising temperature does not take a toll on people's rest.

Called Heats – Heat Exposure, Activity, and Sleep – the project is set to run for three years, and is funded by the National Research Foundation.

More than 100 construction workers and Singapore residents will have wearables tagged to them so that researchers can measure the effects of heat exposure on sleep. The devices will measure heart rate, a person's sleep stages and wakefulness, among other things.

Currently, Singapore has about 76 warm nights each year, with the temperature hitting 28 deg C or above in some parts of the island.

To fight night-time heat and humidity, the researchers will develop smart systems that can adjust fan wind speed and air-con temperatures.

Professor Stefano Schiavon, a civil and environmental engineering expert from the University of California, Berkeley, and Bears, said: "Instead of having the AC on the entire night at a fixed temperature, the smart system can autonomously change the set point during the night to meet people's needs."

Prof Schiavon is co-leading the project with Prof Lee.

Prof Lee also noted that air-conditioning cannot be a solution to heavily rely on, since it releases waste heat and uses refrigerants that fuel global warming.

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NOT ACCLIMATISED TO WEATHER

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PROFESSOR MARCUS ONG, a senior consultant at Singapore General Hospital, recalling an Australian man who joined a local marathon the morning after landing in Singapore. Slightly fewer than half of the 426 cases in the study were foreigners.

cy to underestimate their risk to heat illnesses in cool and wet weather, he added.

Slightly more than half of the 426 cases were Singapore residents, and the rest foreigners who were likely not acclimatised to the weather here.

Prof Ong recalled an Australian man who joined a local marathon the morning after landing in Singapore.

"He didn't make it to the halfway mark and after 10km, he collapsed. He was taken to the hospital for heatstroke. It was quite bad. He was confused and drowsy. We had to send him to the ICU and intubate him."

Prof Ong added that 14 per cent of the 426 patients were sent to the intensive care unit and two patients, both seniors, died.

Heat illnesses can be prevented and treated when addressed promptly without delays, he said. Addressing healthcare professionals at the seminar, he noted that there is a tendency to misdiagnose patients who are suffering from heat injuries, and that can be fatal.

He cited full-time national serviceman (NSF) Dave Lee, 19, who died of heatstroke in 2018. The NSF was evacuated to a medical centre about 40 minutes after he was seen to be suffering from signs of heat injury. Corporal First Class Lee's supervising officer had even initially asked for a ground sheet to cover the late NSF as his arm was cold.

Prof Ong noted that a patient's core body temperature, instead of skin temperature, should be measured to diagnose heat-related illnesses. Seizures are also a complication of heatstroke, which can be misdiagnosed as epilepsy.

Before Prof Ong embarked on this study with his Duke-NUS colleagues, there were only two published epidemiological reports about heat illnesses in Singapore. One is more than a decade old, and the other is specific to the military.

While data from SGH shows that younger adults are more at risk of heat illnesses, this trend could change as Singapore faces rising temperatures amid climate change.

Prof Ong and his team are hoping to expand their clinical studies and build a registry of heat-related health cases by working with hospitals here.

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