

Impact of Heatwave on Critical Care of Cardiovascular Disease Patients

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Dear Editor,

Recently many reports have remarked raised mortality for various reasons in summer through extremely high weather temperatures^{1,2}. Heatwave is when the weather is hotter than usual and is a public health hazard. Climate change poses global health risks³.

Children, the elderly, and people with chronic diseases can be significantly affected by heat waves. Many investigations documented that hot temperatures raise the risk of cardiovascular morbidity and mortality. Heat wave events increased significantly during the last decade in the world. Evidence shows that heat waves instantly negatively affect cardiovascular disease patients. The outcomes proved that cardiovascular mortality might occur fast when exposed to heat waves, as their capacity to cope with heat is already compromised. Also, studies show that longer heat wave time had a greater mortality risk⁴⁻⁵.

The mechanisms of the heat effect on the human body affect dehydration, raised blood viscosity, and a higher risk of thromboembolic diseases. Moreover, high temperatures can damage the endothelial process, increasing the risk of cardiovascular incidences. Also, besides dehydration, the work needed to maintain thermoregulation is raised, which stresses the cardiovascular procedure.

Also, Heat waves can negatively impact many human organs, such as physiological and neurological procedures, then cause hospital admissions and even

mortality in people with chronic diseases. Heatwave 's influences on morbidity include critical care admissions for multiple causes, such as more chronic obstructive pulmonary disorders or stroke in old age patients and respiratory illnesses in children. Cardiovascular disease was reported as the most significant single contributor to the overall disease burden in the world. Respiratory diseases, such as pneumonia and acute lower respiratory diseases, was the leading cause of death among the elderly⁶⁻⁸.

Age is a common cause for the rise in mortality rate during heatwaves because of physiological changes that happen with aging, inadequate admittance to medical care, chronic disease, specific medications, stationary lifestyles, and the absence of availability of air-conditioning³.

These circumstances all influence body heat control and consequently begin dehydration. Other exposed people include those with pre-existing diseases, mental health disorders, diabetes, respiratory and renal illness, overweight people, and cardiovascular³.

There are several forms of heatwave people, such as heat cramps, heat syncope, heat fatigue, heat exhaustion, and heat stroke. The risk factor for mortality from these heatwaves can rise with the mixture of high temperature, overall health, and personal lifestyle. Lifestyle circumstances can incorporate drinking adequate liquids, air conditioning, access to the transport system,

dressing, crowded areas, and learning how to react to heat wave situations^{1,3,9}.

It is recommended that aging people, especially those with chronic medical diseases, stay inside during heatwave situations, mainly while an air pollution warning is in impact. Also, vulnerable people without air conditioners should move to areas with air conditioning, such as libraries, shopping malls, etc.

Officials reported several deaths related to the hot temperatures and moisture, and they announced thousands were needed for emergency departments.

Studies have investigated the aspect of heat waves' effects on mortality rate and documented that individuals were at increased risk when heat waves were more intense or longer or happened in early summer. Those studies on heat wave-related mortality have important implications for decision-makers to design an early warning system by establishing a heat wave threshold and the estimated increase in deaths above the threshold¹⁰.

The WHO and other international organizations have guided how to adjust to climate change worldwide with developments in an urban pattern, optimized energy-efficient homes, training, and helping vulnerable people⁴. Though, to perform these instructions, studies are increasingly required to classify geographical and environmental heat-related health consequences and evaluate environmental and geographical vulnerabilities¹¹.

To sufficiently rescue patients from heat waves and utilize public resources, it is necessary to comprehend which daytime heat waves raise mortality risk. The findings proved the necessity of developing warning techniques in summer. Public health workers should take action to educate communities on the health risks of heat waves and teach them how important it is to reduce exposure to heat and increase access to a cool environment.

Policymakers should execute an early warning system to control negative heat wave impacts on patients, including early alerts and advisories, and implement various emergency measures to mitigate the heat dangers. Meanwhile, adding staff and increasing their rotation for hospitals, clinics, and health care during heat waves is essential. In religious ceremonies during

summer, critical care of vulnerable people should be considered.

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