Teaching Hospitals: The Missing Link in Pakistan's Heatwave Response

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Pakistan faces a significant public health threat from recurring heatwaves, and teaching hospitals are often unprepared to handle affected patients. This article highlights the critical role of teaching hospitals as central points for integrating heatwave management through community engagement, workforce training, supervision, and clinical care. It also incorporates a 5-domain framework covering infrastructure development, medical staff training, surveillance and early warning systems, and community outreach. Local interventions show that these strategies are cost-effective, and the presence of trained staff and organized systems at hospitals greatly reduces heatwave-related mortality. Implementing this framework aligns with national guidelines and will transform teaching hospitals from passive facilities into proactive centers capable of effective response and timely patient care.

Introduction

Repeated heatwaves in Pakistan are increasingly becoming health emergencies and not seasonal events. In 2024, temperatures in the Karachi heatwave reached nearly 49 degrees Celsius, resulting in hundreds of reported deaths and thousands of hospitalisations and exposing the vulnerability of the country's healthcare system.[1] Despite these recurrent crises, the heatwave preparedness is mostly lacking in the operational planning of many Pakistani teaching hospitals.[2] Teaching hospitals are a unique, underused resource in heatwave response. Unlike other healthcare facilities, they are sites of clinical care, workforce training, public health surveillance, and community engagement all at once. But heatwave preparedness is seldom integrated into their institutional framework.

Evidence and Proposed Framework

There is evidence that relatively simple interventions can make a dramatic difference in outcomes. The Heat Emergency Awareness and Treatment (HEAT) educational intervention in Karachi was effective in improving physicians' recognition and management of heat-related illnesses.[3] Similarly, a study from tertiary-care in Pakistan showed a significant reduction in heat-stroke mortality with the implementation of evaporative cooling strategies and temperature-controlled environments.[4]. According to the above mentioned findings, it becomes vivid that although preparedness encompasses integration of costly infrastructures, but also ensured system organization and capacity building of the workforce involved.

Table 1: *Proposed heatwave preparedness framework for teaching hospitals in Pakistan*

Domain	Current Gap	Recommended Action
Infrastructure	No dedicated heatstroke bays; overcrowded Emergency Departments (EDs) without cooling equipment	Designate air-conditioned heatstroke units with ice packs, Oral Rehydration Solution (ORS), IV lines, and fans in all tertiary hospitals
Staff Training	Under-diagnosis of heat exhaustion vs. heatstroke; delayed cooling initiation	Mandatory pre-summer Heat Emergency Awareness and Treatment (HEAT) training for all ED staff
Surveillance	Heat-related deaths miscoded as cardiac/neurological events; <5% of mortality accurately recorded	Implement International Classification of Diseases (ICD)-10 coded heat-illness registry at every teaching hospital linked to Provincial Disaster Management Authority (PDMA)
Early Warning	No PMD-hospital integration; surge plans absent	Connect Pakistan Meteorological Department (PMD) heat alerts directly to hospital command centers to activate surge protocols >=48 h in advance
Community Outreach	Teaching hospitals not engaged in public heat-health education	Deploy medical students and interns for pre-season community heat-stroke awareness campaigns

A five-domain framework is proposed, designating teaching hospitals as preparedness centers for recur-

rent heatwaves (Table No 1). First, heatstroke management and mitigation wards will be set up with designnated cooling facilities. Second, emergency department staff will receive annual practical training to handle heat stroke cases. Third, a link will be created between the provincial disaster management department and the ICD-coded heat illness surveillance system to ensure accurate and prompt reporting. Fourth, Pakistan Meteorological Department's heat alerts will be integrated into hospital surge-response protocols to enhance readiness. Fifth, before the peak summer months, medical students and interns will undergo awareness training alongside hospital medical staff. It is note-worthy that the proposed measures align with the guidelines suggested by national authorities.[5] There-fore, there is an urgent need for the full and faithful institutional implementation of these guidelines.

Conclusion

Considering the critical threat posed by heatwaves and the severity of heatstroke cases, it is essential to convert teaching hospitals into dedicated hubs for early detection and preparedness. This step aims to reduce the rising mortality rates caused by heatwaves. To achieve this, it is crucial to implement government guidelines and enforce the %-domain framework to transform and bolster these hospitals effectively.

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