

# Review of: "Hospital's Thermo-neutral Zone for Patient Safety and Climate Change Sustainability"

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**Potential competing interests:** No potential competing interests to declare.

This paper is titled: "Thermal Comfort Temperature Evaluation in Hospital Wards for Patient Safety and Climate Change Sustainability". The study examines the use of hybrid ventilation systems at Kadhimiya Teaching Hospital to ensure consistent air quality in the wards. In this context, the authors stress that the installation of temperature control systems is vital to provide thermal comfort.

The Abstract points to the worry of having to mechanically cool buildings in an extreme climate in the absence of secure electricity. It sums up the methodology used to develop the model applied in this research. There is one notable error: reference to a leaf area index of LAI of 4.5 m<sup>2</sup>/ha; LAI is, of course, dimensionless, representing the ratio of one-sided leaf area per unit ground area.

The Introduction discusses green building practices and introduces the "Construction Green Building Certification (CGCC) programme". It is not clear where this program comes from, as a Google search failed to find any reference to this other than in online peer reviews of this article. Presumably, it is the Iraqi green building certification program? This needs to be clarified/made explicit.

The authors then suggest that the objective of their research "is to provide insight into the interconnectedness across many disciplines within the subject of CGCC." While this does not explicitly refer to hospitals, the focus returns to that topic at the end of the introductory section. The background to the specific case study hospital – the Kadhimiya Teaching Hospital – is elaborated in the Methodology section, together with a description of the model developed to assess the thermal comfort of the building.

The authors suggest that "When buildings are raised to higher heights, the surrounding air temperature is influenced to remain low, average, and typical". It is unclear what they mean by this.

The thermal modelling carried out for this project incorporated the effects of green infrastructure, building height, and sky conditions (clear or dusty). Acknowledging the multiple factors that can affect indoor thermal comfort, an adaptive thermal comfort approach was applied. The paper emphasises that climate change will exacerbate already extreme heatwave and dust storm conditions in summer.

The authors conclude that their combined measuring and modelling approach could be generalised to the assessment of overheating risks across various building types to help inform the design and management of buildings in Iraq.

This research represents a useful attempt to address a serious issue in a developing country that must deal with a severe summer climate as well as a range of significant economic and resource constraints. The resulting paper will need considerable English language editing, but the authors should be commended for tackling this important topic.