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.

General comments

This paper presents a standardized methodology for evaluating thermal comfort in the field. The paper demonstrates a fairly competent exercise with potentially useful findings and an exceptionally good data set. However, the study needs to address missing information, some important details, and it also requires some restructuring. Moreover, the methods, the discussion, and the concluding sections need to be reviewed and strengthened. Please address other critical comments below.

Other comments

1. The title of the paper should be revised. The title should also indicate the climate, season, or timeline of the study.
2. The abstract should be concise. It should highlight the original contributions of the study to the body of knowledge.
3. Another major drawback of this study is that it needs to show how the findings will revolutionize or even enhance the sustainable construction & the built environment industry, especially in hospitals. The paper struggles to justify why this study is important and why it needs to be looked into.
4. In the introduction section, the authors should review and cite other relevant studies in Iraq and other Middle Eastern countries to elaborate on the importance of the study.
5. In the methodology section, the authors should review and cite relevant studies on methodologies related to the study, especially from Iraq. Appropriate references should be provided regarding the selected methodology.
6. The methodology section needs to clearly state the applicability, validity, and trustworthiness of each approach used in the study. There is no clear discussion on how the results are going to be validated. Why? The Method (& methodology) section should have been discussed in detail. It would have further elaborated the study.
7. In section 2.1, the study mentions the measuring devices used. However, the study did not discuss what calibration and validation processes were adopted to make the data more reliable? The study also needs to indicate which literature will support the type of data logger, calibration, and validation process used. As such, the whole literature review and methodology section needs thorough revision.
8. There are limited statistical tests to investigate the relationship between the variables further. Statistical tests should be explored to support the results and make the study more elaborate. Statistical tests are required for this study; there is a possibility for more interesting and revealing results in this study.
9. In section 3.4, the study mentioned some adaptive thermal comfort models. However, there was no detailed assessment of the indoor and outdoor thermal comfort, building performance analysis, and discussions on how this will

impact human adaptation. Why? In addition, there was no analysis based on adaptive standard models to support the study, i.e., EN 16798-1: 2019 (formally EN 15251: 2007), ASHRAE 55-2017 and/ or ISO 7730. This needs to be explored to understand the hospital building performance with regard to indoor and outdoor conditions, and how occupants and patients adapt to these conditions, especially if overheating is predicted in indoor or outdoor spaces. This will further make the intent of the study more elaborate and focused.

10. In section 3.5, page 13, the paper noted that 'during the hot summer months, three independent hospital wards exceeded the temperature range anticipated by the thermal comfort adaptive model despite low-level monitoring'. However, the paper did not state what this temperature range is.
11. The quality of figure 4 is poor and ineligible. The quality of the images needs to improve. Furthermore, the parameters illustrated by lines of different colours in figure 2 need to be reviewed. They should be presented in such a way that the differences are visible when printed in black and white.
12. The analysis of the results in section 3 seems limited; it is not thorough. Additional comparative analysis between the variables and results will be required.
13. In section 2.1, page 4, paragraph 4, the paper states that 'Daily monthly average air temperature was monitored by means of shielded copper-constantan thermocouples.' It is not clear what this statement means. This needs further clarification and revision to communicate what information the paper is trying to portray effectively to the reader.
14. The analysis and conclusion need to be reviewed further to indicate the correlation between the occupants' thermal sensation and perception with regard to environmental parameters. This should be varied between the different times of the day, the summer and winter seasons, and overall occupants'/patients' comfort and adaptation.
15. The EN 16798-1 model and any additional standards to evaluate the thermal performance of the hospital building envelope, indoor thermal comfort, and their relationship with the occupants' survey and human comfort should be explored in this study to make it more elaborate. More literature review should be carried out and included in this study.
16. The concluding section should be used to summarise the critical findings of this study.
17. The study should consider a comparative analysis of the findings obtained in this study with the findings obtained in other studies in the same subject area in the region and other regions of the world.
18. Overall, additional analyses should be considered to find if there are associations between the variables.
19. The practical implications and applications of this study should be mentioned in the concluding section.