Reviewer’s report

Title: Beyond Work Hours: The Patient Factors for Night-shift Physician Workload in a Two-year General Medicine Cohort

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Reviewer: Lena Y Ansmann

Reviewer’s report:

The presented paper addresses the topic of residents’ workload in on-call night shifts, which may per se be relevant for hospital planning and staff management. However, I am afraid that the focus of this research, the data measured and the descriptive analysis are not sufficient to draw reliable conclusions for practice. But it may contribute to ground work on the determinants of workload in hospitals. Here are some comments the authors may work on.

Major compulsory revisions:

1. In the title and the manuscript the authors mention “patient factors” which is quite a broad term that may encompass more than the clinical state of the patient. According to Horner there are other patient factors e.g., sociodemography, complexity or interaction, that may also impact the workload. I suggest that the authors write “clinical severity”, according to Horner’s framework, instead of “patient factors”.

2. Furthermore, I understood that the authors studied the workload of residents, but the title says “physician workload”. This confused me throughout the manuscript, since sometimes the authors speak of residents and other times of physicians. The authors should have a look at it and try to distinguish between the physicians and residents in their study and give a reason why only residents have been studied.

3. I do not understand the term “hospitalist”, possibly because I am no native speaker. Since many of the journal’s readers aren’t native speakers as well, a definition is necessary.

4. The abstract and the end of the introduction section would benefit from a clear objective and research question. Please try to clarify what you have been studying.

5. Could the authors comment on the fact that in quite many cases (21%) residents did not respond to the calls? What are the reasons?

6. Could the authors comment on the high rate of DNR patients in the hospital? For foreign readers it might be interesting to know how the regulations regarding DNR are designed in Taiwan. In many other countries DNRs are not common or not regulated.

7. In my opinion, the conclusion section of the abstract needs improvement to highlight the relevance of this research.
8. Page 4, line 7: Is there evidence on the impact on patient safety or did people just raise concerns?

9. Page 4, line 16: Is there evidence that night workload impacts residents’ health or is it the author’s hypothesis.

10. Page 4, line 17-19: Could the authors give an explanation which pager calls are not relevant to care and do not affect patient management. Did the studies cited say something about it? The authors should mention in the text that the studies are very old.

11. Page 5, line 2-4: What is the difference between “reasons of calling” and “sources of calls”? Furthermore, the authors mention that the sources have rarely been studied without mentioning the results of these few, but relevant studies.

12. Page 7: Did the ethics committee comment on blinding the residents? I was wondering whether the observation of staff might interfere with ethics/staff protection, since their informed consent was not given. Also, the authors write that the nurses were blinded to the study design. What did the authors mean by that, since the nurses were the ones collecting the data?

13. Page 7: Could the authors explain why they assessed the nurses’ satisfaction? It is not clear to me how that is related to the study’s aim.

14. Page 10, lines 7-9: Could the authors please explain their choice of statistics? I am a bit confused about choosing the Pearson correlation coefficient and Chi² for differences between three nominal groups. As far as I know, Chi² tests for differences between two groups and Pearson is used for correlations between continuous variables.

15. Page 11, lines 16-18: Do the authors have an explanation for the very low percentage of bedside visits for unstable patients? I would assume that unstable patients would need greater attention because their state is more severe than that of the stable patients.

16. Page 12, lines 1-3: Do the authors have an explanation for the slightly higher satisfaction for unstable patients? Is it due to better patient management?

17. Page 13, line 1: At the beginning of the discussion the authors announce that the presented study may help to reduce workload. I am not sure that this study is able to do that, since no evaluation of unnecessary calls or mismanagement has taken place. Thus, no conclusions on this should be drawn.

18. Page 13, lines 8-9: I am also not convinced that the study really only measured workload depending on patient factors. Since the residents’ responses to calls were analyzed, it rather captures how residents or wards deal with patient calls. Could the authors comment on that?

19. Pages 13-14: The authors provide a lot of information on the state of research which I would have expected in the introduction part. Maybe the authors can think about switching some of the parts to the introduction section.

20. Page 14, lines 1-3: From my view the study mentioned from Canada does not convey much relevant information and could be left out.
21. Page 14, line 3: What is meant by “pure medical populations”?

22. Page 14, lines 4-6: The authors summarize that no study has studied the reasons for calls among different patient groups. And I am not sure whether the presented study is able to accomplish that either, since like the author mentions on page 18 (lines 4-5) the reasons for calls have not been studied here.

23. In general, I think that to assess workload during night-shifts it would have been necessary to record the time spend with a patient call (response, visit and treatment). The presented data tells how many calls have been made according to patient’s state, but it does not capture whether the clinical states result in more efforts to be made. Do the authors have additional data on that?

24. Page 14, lines 17-19: I do not understand what is meant by the sentence “In our patients…”.

25. Page 15: The conclusion that mobile phones may be more efficient than pagers did not arise from the data studied in this paper. Thus, conclusions should not be drawn here. In general, I would advise to be more careful with implications and conclusions.

26. Table 3: The p values are unclear to me. Why do only some of the variables have p-values? And why do the lines with the numbers (n=…) have a p-value. What has been tested? Since nurses’ satisfaction is measured with a Likert-scale, the authors should use ANOVA.

Minor essential revisions:

27. Page 4, line 8: Please fill in the country in which the ACGME is located: US.

28. I think that the introduction section would benefit from more input regarding Horner’s conceptual framework which guided this research.

29. In the discussion section, please comment on the generalizability of your results, since this study took place in one general medicine ward of a university hospital in Taiwan.

30. Page 6, line 15: Please introduce the abbreviation ED by writing out the phrase.

31. Methods section: How many residents participated in the study and was there fluctuation/turnover?

32. Page 8, line 2: Here, the authors state their hypothesis, which may be better placed near the research question in the introduction section.

33. In my opinion, the results section does not need subheadings.

34. Page 20, line 3: I am not sure whether the terms “efferent” and “afferent” help to understand what is meant. Perhaps think about a better description.

35. Figure 1: Does “general” mean “stable”? Please use consistent terms.

36. Table 2: Please provide the statistical measures (means, SD, %) within the table by using different columns for means (SD) and n(%).

Discretionary revisions:
37. For the reader it may be interesting to know the country in which the research took place right-away. It might be good to mention it in the title.

38. I would recommend to change the subheadings “Night-shift physician workload sampling” to “Study design” and “Data collection” to “Measurement”

39. I was wondering whether nurse’s workload would be a research topic that is equally important. In following studies it could be interesting to also look at the nurses workload. The authors could mention that in the discussion.

40. Table 4: The table is nice to have, but since it is no literature review the table is not necessary.

**Level of interest:** An article of limited interest

**Quality of written English:** Needs some language corrections before being published

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I declare that I have no competing interests.