Author’s response to reviews

Title: Nurse staffing in large general hospitals in China: An observational study

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Author’s response to reviews:

Dear Editor,

Thank you very much for your attention and the reviewers’ evaluation and comments on our paper. We have revised the manuscript according to your advices and detailed suggestions. Enclosed please find the responses to the reviewers.

Thank you very much for all your help and looking forward to hearing from you soon.

Best regards

Sincerely

Weiyan Jian

Responses by the Authors to the reviewers’ comments

Reviewer 1 Comments for Author

1. The authors have taken the comments of the reviewers well into account. The manuscript has become an interesting article extending the body of knowledge to China.
R: Thank you for the comments. In response to the comments of other reviewers, the content of this paper has made major revision. So further review may be required.

Reviewer 2 Comments for Author

1. This is the second review of this article and it is accepted that the you as authors have attempted to respond to previous concerns resulting in the article requiring extensive editing. However, the article still has problematic reporting on methods and the discussion of results is not of a sufficient standard for me to recommend publication.

R: Thank you for the comments. We modified the purpose and description of the paper. Pay more attention to describe the situation of nurse staffing, rather than compared the NTP ratio among different countries and regions. We aimed to discover the characteristics and problems of nurse staffing in China. We find relatively low level of nursing staffs at night, which could be a security risk for patients, and we think more research should be taken in the future.

Reviewer 3 Comments for Author

1. The points I raised are well addressed. More editorial work is required before being published.

R: Thank you for the comments. In response to the comments of other reviewers, the content of this paper has made major revision. So further review may be required.

Reviewer 4 Comments for Author

1. There are still numerous grammatical errors throughout the paper.

R: Thank you for the comments. This question has been revised according to your suggestion. In response to the comments of other reviewers, the content of this paper has made major revision. So further review may be required.

2. Background: Necessary information about why you want to study NTP ratios in different departments and in different regions is lack. There is no introduction about large general hospitals in China. What do you mean by "some countries and regions… but a ratio is used for nurse staffing"?
R: Thank you for the comments. We have revised the content of this paper to show our original intention: show the current situation of nurse staffing in China, than find unsolved problems. Through the revision of this paper, we introduced what’s large general hospitals and why we choose tertiary A hospitals as samples in “Background”. As “Tertiary A hospitals are the representative of large general hospital in China. The ranking of the hospitals was determined by the National Health Commission, and tertiary A designation is granted to hospitals that are deemed “excellent” on several hospital measures such as infrastructure, staffing, size, and clinical capacity. Tertiary B designations are given to hospitals that are deemed “good” on the above measures. The tertiary A hospitals not only have the highest level of medical technology in China, but are also the major providers of critical care, as patients treated at tertiary A hospitals generally have more complex conditions. Because adverse events are more serious, the problems of medical quality and patient safety deserve more attention in these hospitals.”

3. Method: The procedure of data collection was still not clearly stated. References are needed when you introduce tertiary hospitals in China. Patients who have more complex conditions do not necessarily have more serious adverse events. Your argument (page 5, line 40-46) is untenable. What do you mean by "geographic information"? Why did you survey the number of beds? I am still confused about how did you collect the data on August 28, 2017, at 10 am and 10 pm? Also, why did you choose the time points as 10 am and 10 pm? What's the difference between "large general hospitals" and "tertiary hospitals"? Reference about "California method" is needed (page 6, line 12-17). What do you mean by "number of beds in the daytime and nighttime"? The introduction about regions in China should be moved to background section. Also, you may need to state why you want to know the NTP ratios in different regions in China? What do you want to do after you know the difference?

R: Thank you for the comments. These questions have been revised according to your suggestion. We redescribed the data source information, as “For this cross-sectional study, a database established by the National Centre for Nursing Care Quality Control, which conducted a national survey of the staffing of nurses in China mainland in 2017, was analyzed. The obtained data involved 20,375 nursing departments in 668 large general hospitals, covering 31 provincial-level administrative regions (excluding Hong Kong, Macao, and Taiwan) in China. The obtained information included: the geographic information of the hospitals, the information of departments, such as the number of beds, nurses and patients at the data collection point: during the day (10:00 am) and at night (10:00 pm).” We use “number of beds” to evaluate the size of the department. The introduction about regions in China have been moved to background section.
4. Results: You said that "4,732 of which were excluded because they were outside the scope of departments included in this study", if so, these departments are ineligible and should be excluded at the very beginning when you invited the departments. Why 3 hospitals were absent from 671 hospitals? What do you mean by comparing the number of departments from different regions? They are absolutely "decreased from eastern to western region" because you have 303 hospitals in the eastern regions versus 175 in the western regions. Don't know why you want to compare the NTP ratios between day and night time. Please see table 3 (p=0.012<0.05) and then check if you made a mistake by saying "no significant difference was observed across regions" (page 9, line 33-35).

R: Thank you for the comments. These questions have been revised according to your suggestion. There are 671 tertiary A hospitals in the database, we extract all data from this database, than some departments were excluded because they were outside the scope of departments included in this study or had no inpatients or nurses at the study-related time point(s).Because of the problems of data quality, we excluded 3 hospitals in this study.

5. Discussion: Necessary references were still absence in the discussion part. It seems that you post your point of views too much without strong backing evidence. It's inappropriate to say "The number of patients per nurse of nighttime is nearly three times that of daytime, which may cause adverse effects for patients." Do you have strong evidence on this point? Do you mean that the number of patients per nurse of nighttime should be the same with the number of daytime in order to reduce adverse events? The main reason why the NTP ratios are different between daytime and nighttime is the difference on workloads, however, you did not concentrate on the workloads. Also, please consider the workloads when you compare the nighttime NTP ratios between hospitals in China and the other countries (page 12, line 6-12). On page 10, line 51-60, I don't think it is necessary to explain why ICUs have the highest NTP ratio because people can understand this common sense. Please reconsider the first limitation because you have already compared the NTP ratios of different departments, which having different types of patients. The second limitation is not clear to me.

R: Thank you for the comments. We revised the content of “Discussion” section. So further review may be required. We introduced the characteristics of nurse staffing in China, than discussed the potential risk of the low level of nursing staffs at night.
As “…Based on the results, certain regional and departmental differences were found in the staffing of nurses in large general hospitals in China. This may be related to the regional economic development, the allocation of health resources, the value of labor force, the level of nursing needs, and other objective factors. In addition, it was found that the large general hospitals in China can basically meet the standard of staffing of nurses set by the government during the day, but the effects of large drop in nursing manpower at night should be further analyzed…”

6. Conclusion: Please check if you made a mistake by saying "large general hospitals in large general hospitals of China" (Page 13, line 27). It is inappropriate to say "…were found in different regions and departments, which may bring safety hazards to patients" and "The quality of care at night plays an important role in patient safety"(line 36-39) because you did not measure "safety hazards" in your study. Also, "The phenomenon of ……, which cannot effectively evaluate the workload of nurses" is not a conclusion.

R: Thank you for the comments. These questions have been revised according to your suggestion. As “In general, there are some regional and departmental patterns in the staffing of nurses among large general hospitals in China. The unsolved problem is that the low level of nursing staffs at night may potentially influence patient safety. In order to deal with this problem, the government of China needs to establish standards for the staffing of nurses during different periods and in different departments, so as to guide hospitals to carry out rational allocation of nursing resource, enhance efficiency, improve nursing quality and maintain patient safety.”

7. There are a lot of mistakes in the format of the references.

R: Thank you for the comments. This question has been revised according to your suggestion.