Reviewer's report

Title: Morbidity burden of respiratory diseases attributable to ambient temperature: a case study in a subtropical city in China

Version: 1 Date: 23 Jul 2019

Reviewer: Ying Zhang

Reviewer's report:

This paper is of importance in research on temperatures and health. However, there are some concerns and mistakes in the paper that need to be addressed.

Line 56, p5: "The hospital is one of the first-class hospitals in Dongguan." How many hospitals are in the city? What is the proportion of patients in this hospital to all patients in the city? Are the patients a representative sample of all patients in the city? Did all the patients live in the city before visiting the hospital so that they had the exposure to the hot?

It's not clear what the difference is between "extreme" and "moderate" temperatures. In the methods, the author defined the extreme hot and cold as "...temperatures at 5th percentile or less of temperature, and at 95th percentile or above of temperature, respectively" (line 12-14, p8) and the moderate temperatures as "the ranges between the optimum temperature with 5th percentile and 95th percentile of temperatures, separately" (line 47-49, p8).

Line 28-31, p 11: "Results revealed that a significant fraction (10.4%) of respiratory outpatient visits attributed to ambient temperature within the study period." Should the number be 8.4%?

Line 39, p 11: "The result can be understood by that most of days (about 89.1%) in our study time series are at moderate hot temperatures." The proportion of extreme and moderate temperatures in the exposures should be reported in order to better understand the results.

Line 42-48, p 11: "This finding has important public health implications: although extreme hot is riskier than moderate hot, moderate hot weather accounts for large proportion of days through a year in tropical regions." Is the study city a "subtropical" one as stated in the title?

Line 47-59, p 11: "Therefore, moderate hot is much more important than extreme hot in tropical regions when considering the total adverse health effects exposure to ambient temperature, which indicates that we should pay more attention to moderate hot in planning adaptation strategies and measures to reduce the health risk of ambient temperature." Again, the study city is not tropical. In addition, the highlighted message is a bit misleading if missing the higher risks from extreme hot. The sentence should be revised.

Line 56, p 12-13: "We postulated that hot temperature generally occurs during daytime, and the younger people stayed outdoor longer and may be less aware of their body temperature changes, so they have more chance to experience hot ambient temperature than the elderly." The
interpretation of more burden from cold for older people is not convincing. Was it because that for certain conditions, e.g. COPD, most of the patients were older? Indeed, the findings regarding the impacts of cold on health of older people in the city have not been sufficiently addressed in Discussion.

**Level of interest**
Please indicate how interesting you found the manuscript:

An article of importance in its field

**Quality of written English**
Please indicate the quality of language in the manuscript:

Needs some language corrections before being published

**Declaration of competing interests**
Please complete a declaration of competing interests, considering the following questions:

1. Have you in the past five years received reimbursements, fees, funding, or salary from an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

2. Do you hold any stocks or shares in an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

3. Do you hold or are you currently applying for any patents relating to the content of the manuscript?

4. Have you received reimbursements, fees, funding, or salary from an organisation that holds or has applied for patents relating to the content of the manuscript?

5. Do you have any other financial competing interests?

6. Do you have any non-financial competing interests in relation to this paper?

If you can answer no to all of the above, write 'I declare that I have no competing interests' below. If your reply is yes to any, please give details below.

I declare that I have no competing interests.

I agree to the open peer review policy of the journal. I understand that my name will be included on my report to the authors and, if the manuscript is accepted for publication, my named report including any attachments I upload will be posted on the website along with the authors' responses. I agree for my report to be made available under an Open Access Creative Commons CC-BY license (http://creativecommons.org/licenses/by/4.0/). I understand that any comments
which I do not wish to be included in my named report can be included as confidential comments to the editors, which will not be published.

I agree to the open peer review policy of the journal