Reviewer’s report

Title: Short-term association between ambient temperature and homicide in South Africa: a case-crossover study

Version: 0 Date: 23 Aug 2019

Reviewer: Gregory Breetzke

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Review

Short-term association between ambient temperature and homicide in South Africa: A case-crossover study

ENHE-D-19-00290

This study investigates the association between daily ambient temperature and homicide incidences in South Africa using mortality data. Having undertaken some similar research in the past, and in contexts outside the US, I was very much interested in reading this work. I like the overall premise of the article and I believe the study is publishable and does add to the extant literature however I have a number of relatively minor concerns that I would recommend be addressed. These issues I outline below:

Background: The background is extremely short - I'm not sure whether this is typical in this journal, but I think this section is lacking. The review of the literature (globally and locally) is scant which detracts from the contribution of the work. Literature is reviewed to some extent in the Discussion later on but needs to be delved into here in more detail. Moreover the two main theoretical frameworks commonly used to explain the crime-temperature linkage (TA and RA theory) are not adequately outlined here.

Materials and methods: Is there a date provided for each mortality? The author/s mention that a cause is provided for each case - can this be expanded upon? How does this data 'align' with SAPS data regarding victims of murder/homicide in the country over the 17 years? If the author/s are concerned with the under-reporting of violent deaths this could provide a point of reference. Regarding the temperature data, how was the 'representative station for each district' (pg5, line132-133) determined? This is important information that was omitted. Also, clarify the parenthesis in the following sentence '(daily maximum, 7%; daily minimum, 12%)'. The up-take of temperature data of the 52 districts from 29 to all 52 districts needs to be tabulated or given more attention here. What exactly was missing? When? and how was this accounted for in the analysis? How was the interaction by district tested? More information required there. Relatedly, the author/s note that 'Study periods with missing temperature data were excluded from the analysis' (pg 6. Line153-154). What % of this of the total?
There is also no explicit aim nor hypothesis listed in the script which makes any inferences made somewhat unclear.

Discussion: Importance of the study from a policy perspective is largely ignored. Also the implications for South Africa in terms of health. Some indication of the variability of the size of the districts used would be beneficial. I would expect a large range in size.

Conclusion: The author/s mention the limitations of their datasets in detail in the Discussion section and then indicate in the first line of this section how 'extensive and detailed' their mortality data is. Which one is it? This section seems like an afterthought and should be integrated into the Discussion section or expanded to provide the unique contribution of the study. As it currently stands, it is weak.

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