Reviewer's report

Title: Seasonal and Climatic Variation in the Incidence of Adult Acute Appendicitis: A Seven Year Longitudinal Analysis

Version: 0 Date: 02 Mar 2020

Reviewer: Roland Andersson

Reviewer's report:

This is a retrospective analysis of the monthly average number of appendicitis cases over a 7 year period in a district in North East of England. The study includes 703 patients over the age 18 years. The authors found a strong seasonal variation with a trough in January and a peak in July. A strong correlation was found with the average monthly number of sunhours and temperature but not rainfall.

Comments:

1. I would like to know the size of the population from which these patients were drawn, preferably with estimates of the incidence rate. And also if the population was stable of the period or there were changes. Especially interesting is if there are seasonal changes in the population covered by the trust. Normally only patients with the legal domicile in the area should be included to counter such a bias.

2. It is an important weakness that only patients above age 18 years were included as the peak of appendicitis is in the teenage. Why?

3. The authors have used the monthly average for the analyses. Normally this kind of analysis should be adjusted for the different length of the months. Monthly average over a longer period may also induce bias as there may be a secular trend over the 7 years which may have an influence.

4. I would prefer a more sophisticated method for the time series analyses that uses all the 84 datapoints. This may have given some more information about the true association with temperature or rainfall as you can have cold summer months. And this would adjust for any secular trend.
Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

No

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

Yes

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

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

Acceptable

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