Reviewer's report


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Reviewer: Jennifer L Smith

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General Comments
This paper presents a good descriptive analysis of spatial and temporal clustering of human brucellosis in Azerbaijan, and the results and conclusions are interesting from a public health perspective. However, potential biases associated with using hospital data should be more clearly acknowledged in the discussion, and the source of your population estimates forming the denominator of the incidence rates needs to be stated. Some sections could be restructured to improve clarity and better support the objectives of this work.

Minor Essential Revisions

Introduction
1. First paragraph - additional background on human brucellosis from a public health/control perspective would help the reader put this analysis in context. You discuss transmission, but what are the consequences of infection and the burden from a public health standpoint in terms of morbidity/mortality? How is it controlled?

2. Second paragraph - The author’s statement that the disease was first recognized in 1922 and “quickly established itself, spreading to more than two thirds of the country” implies that it was also not present prior to 1922. Consider altering this sentence to clarify whether it was introduced to Azerbaijan in 1922 or increasingly diagnosed after this date.

Methods
3. This section should follow the introduction.
4. First paragraph – although there is a subheading for “Ethics statement”, the same section covers data collection and management. Additional subheadings should be added.

5. Fourth paragraph - Please cite source of district population estimates used to calculate the annual and cumulative incidences per 100,000 population.

6. Spatial Analysis, First paragraph - Please cite source of the shapefiles used for mapping.

Results:
7. Spatial Analysis, First paragraph – I believe the “~” is unnecessary as you are
not approximating the number but rather reporting how many cases were recorded.

8. Spatial autocorrelation, first paragraph - it would be good to provide a general overview of the distribution of high clusters before listing them in detail (ie in period 1 clusters of high incidence were primarily observed in the West and shifted to the east in periods 2 and 3).

9. Temporal analyses, first paragraph – If “Summer”, “Spring”, etc are used to refer to temporal periods, they should be defined in the methods or a table so that it is clear how many/which months are included.

10. Temporal analyses, first paragraph – What was the “statistically significant” overall test statistic for each time period from the EMM? These should be reported in the text or table.

Discussion

11. First paragraph – the discussion would benefit from stating the main findings from your analyses more clearly, as reported in the abstract, before moving on to discussing the number of cases.

12. Limitations – the authors state that the number of cases were likely to be underestimated due to diagnosis and underutilization of the nation’s healthcare facilities. The likelihood of systematic biases in the data should also be discussed, as people who use Government hospitals may differ from those who do not. Is there a gender difference in usage of health services that may bias your conclusions that there is a higher incidence in men?

13. Limitations – Any potential effects of using time of diagnosis as opposed to time of onset should also be mentioned in this section.

Conclusions

14. Your first two sentences do not directly relate to your analysis, I would suggest focusing on the conclusions you can directly infer from your results (ie the distribution of clusters and overall burden of disease changed between time periods) and then move on to reasons for observed changes and how the results might be used to inform policy and surveillance approaches.

Discretionary Revisions

Methods

1. Third paragraph – The first sentence should follow your explanation of how incidence rates were calculated.

2. Fourth paragraph - I would suggest moving the sentence about dummy regions to the end of this paragraph so that information about the numerator and denominator are presented together.

Results

3. Spatial autocorrelation, first paragraph - it would also benefit the reader to provide an interpretation of what a high-high cluster indicates (ie a district of high incidence that is surrounded by other high incidence districts), as you do for
High-Low cluster at the end. Interpretation of these terms are covered only briefly in the methods.

Minor issues not for publication
1. Results, Spatial Analysis, paragraph 1 – change “simply” to “simplify”
2. Discussion, paragraph 2 – Second sentence “The EMM test also identified.....larger proportion of cases occurring earlier in the study period.” is not clear.
3. Figures are clear and easy to understand, but it is hard to distinguish some colours (particularly the results from the LISA) in black and white. Consider minor changes so that the colours appear different.

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

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