Author’s response to reviews

Title: Time Series Non-Gaussian Bayesian Bivariate Model Applied to Data on HMPV and RSV: A Case of Dadaab in Kenya

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Version: 1 Date: 26 Sep 2018

Author’s response to reviews:

To: The Academic Editor, BMC

Dear Sir/Madam,

Subject: point-by-point response to the reviewers’ comments

We hereby re-submit our research article titled: “Time Series Non-Gaussian Bayesian Bivariate Model Applied to Data on HMPV and RSV: A Case of Dadaab in Kenya” to be considered for publication in BMC. This article was initially submitted with the same title under the submission number: PUBH-D-18-02030. Specific responses to reviewers’ comments on our first submission are as below including comments from the editor in the summary section below.

Rima Abdul Khalek (Reviewer 1):

- Abstract: Background subsection, line 35-37, page 2
  o Added objective of the study

- Abstract: Methods subsection, line 42-44, page 2
  o Transferred text to the Results section
Yanmin Zhu, Ph.D., M.S. (Reviewer 2):

The authors examined an interesting topic on the relationship between RSV and HMPV while adjusting for climatic factors. However, I think this article requires extensive editing.

1. The Background section includes a mixture of literature on RSV and HMPV. I could not follow the logical of the existing evidence that the authors presented, nor could I identify the gap in literature and the importance of conducting this study.

Response:

- Background section, line 80-87, page 4
  
  o Added more text to bring in the logic of existing literature, the gap in literature and the importance of the study.

2. The authors started the Methods section with statistical modeling. Indeed, a lot of details are provided on how the modeling for this study and it seems that the authors had careful thinking about model building and selection. However, some of the information may be redundant and the
readers could be easily lost in terms of the study design and the data used, which I believe are equally important as statistical modeling.

Response:

- Methods section, line 102-118, page 4-5
  
  o Added sub-section “Data” that described the data used in the study including surveillance design

3. They also combined the Results and Discussion, which would be better to be two separate sections. This combined section is also very confusing to read. The authors again discussed about how they selected the best model but with very limited interpretation of the results from a clinical and public health perspective.

Response: Separated Results and Discussion section (line 263, page 12)

- Results section, line 276-281, page 12
  
  o Transferred text to discussion section (line 345-349, page 14)

- Results section, line 284-288, page 12
  
  o Transferred text to discussion section (line 349-353, page 14)

- Results section, line 294-297, page 12
  
  o Transferred text to discussion section (line 354-357, page 14-15)

- Results section, line 316-322, page 13
  
  o Transferred text to discussion section (line 361-367, page 15)

- Results section, line 334-344, page 14
  
  o Transferred text to discussion section (line 368-379, page 15)

- Results section, line 309-310, page 13 and Discussion section, line 355-361, page 15
  
  o interpretation and discussion of the results from a clinical and public health perspective for the best model

Summary

Major revisions
Line 74: “It remains unclear whether HMPV causes milder symptoms than RSV infections”

Line 234:” Wilkesmann et al. [28] showed that HMPV and RSV causes similar symptoms and clinical severity with similar seasonality”

Additional revision for the above statement can clarify confusion on symptom severity.

Response:
- Results section, line 80-81, page 4
  - Deleted text that had the contradiction

Minor revisions

Lines 31-35: the main objective of the study is not clear in the abstract. “Dynamics of time series data” can have different dimensions, better to specify the objective along the lines of determining association between RSV and HMPV

Response:
- Abstract; Background sub-section, line 32-33, page 2
  - Rephrased sentence
- Abstract; Background sub-section, line 35-37, page 2
  - Specified the objective

Line 37-42: Methods section. Main objective was to investigate the relationship between RSV and HMPV. Line 44. Results section. “We have shown that models with climatic factors clearly out-performed those without…”

Suggestions: Alignment between methods and results. Results section should answer the question on the relation between RSV and HMPV.

Response:
- Abstract; Methods sub-section, line 42-44, page 2
  - Transferred text to results
- Abstract; Results sub-section, line 46-51, page 2
  - Rephrased text transferred from the methods section
Discretionary revisions

Line 76: here authors present part of the methods used (“used the negative binomial distribution to address the issue of overdispersion”), with some literature review which is important, but reorganizing this part so that the components related to the methods are added in the methods section. Especially that the negative binomial model was used to account for over-dispersion. In line 77, overdispersion appears without showing how it was observed. If any testing for overdispersion was done, it can be reported.

Response:

- Background section, line 88-97, page 4
  
  o Transferred text to the methods section (line 120-129, page 5)

- Results section, line 327-332, page 13-14
  
  o Shows how overdispersion was observed.