**Response to the Subject Editor and Reviewers**

**Manuscript reference number:** JME-2023-0210

**Manuscript title:** Two Decades of Endemic Dengue in Bangladesh (2000-2022): Trends, Seasonality, and Impact of Temperature and Rainfall Patterns on Transmission Dynamics

We would like to thank the Subject Editor and Reviewers for their constructive comments and guidance to improve the paper. Following up on the Editor’s and reviewers' suggestions and recommendations, we have revised the manuscript, and each modification has been highlighted in red. We have modified the whole paper as per the Subject Editor and reviewers’ suggestions. We have also corrected the grammatical mistakes and proofread the manuscript line-by-line. Besides, we have corrected all typos and minor mistakes in the presentation of the manuscript that the reviewer brought to our attention. Our detailed response is found below. We strongly believe that the Editor’s and reviewers’ comments have helped us to improve the presentation, readability, and technicalities of the manuscript. We thank you again for your valuable comments.

**Response to the Subject Editor:**

1. Reference format.  The will need to be revised to follow JME/ESA formatting as indicated below.

Response: We used Mendeley for formatting the references. Now, we have used the ESA format (Author, year) and corrected it manually for the JME format.

1. Transformation.  I was confused about which log was used for transformation and backtransformation for your figures.

Response: Sorry for this confusion.

We used log10 for only displaying Fig 1: dengue cases by year (Fig 1A) and months (Fig 1B). This is because data are so divergent (in some years there were only a few hundred cases, whereas in some years there were more than 100,000 cases) which makes the figure awkward looking (and difficult to see many years’ cases). The log10 was never used in any analysis and were never mentioned this in the manuscript.

We used the natural log for the estimation of the monthly growth factor (GF). We also backtransformed the value before analysis. The details are here:

“The distribution of the GF was skewed; therefore, we used the natural log transformation before the data was further examined. However, we have also performed a reverse transformation of the log (GF) values by back transforming exponentiating values to the original scale for ease of interpretation ” Page 7.

1. Statistics.  Some of your between-decade comparisons were NOT significant (P>0.05); i.e., the variation about the means overlapped.  Therefore, were the means/trends really different?

Response: Thank you for this comment. We realized that there is some confusion created between the results of the M-K trend test and Sen’s slope test. In our analysis, the M-K trend test was significant while the Sen’s Slope test was not significant.

The difference between the M-K trend and Sen’s slope test is that in the M-K trend test, we can detect whether there is any monotonic nature of the trend existing in time series data. On the other hand, Sen’s slope test shows the magnitude of the increase or decrease in the trend. Our findings show there was a significant monotonic increasing trend of dengue cases in Bangladesh (p<0.05 in the M-K trend test), however, their magnitude was not significant (p=0.14, in Sen’s Slope test).

Please see the results of both the M-K trend and Sen’s slope test on page 11. “In the M-K trend analysis, we found a positive trend of reported dengue cases (p <0.001 and tau = 0.26).” “In Sen’s slope test, the slope was 171.67 (95% CI: -46 to 687) with a tau value of 0.26 and p-value of 0.14 indicating a non-significant upward trend in upcoming months.

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We have now added sentences to interpret the findings of these two tests in the discussion. (Page 13).

“Our analysis shows that there was a significant monotonic increasing trend of dengue cases in Bangladesh for the period 2000-2022 (M-K trend test), however, the magnitude of the increasing trend was not significant (Sen’s Slope test). This might be due to the large variation of the cases reported in different years. For example, more than 82% of dengue cases (n=202,425) that were recorded in the last 23 years (2000-2023) were reported in the recent five years (2018-2022). This increase in case reporting in recent years might be a true increase in dengue cases or could be the result of the development of the health care system, improved diagnostic system, and inclusion of more hospitals in the surveillance system in Bangladesh.”

1. Impact of heat on the EIP.  In addition to the semantics, I find the logic here difficult to follow.  I understand the calculations, but I'm not sure using an average for 26C is relevant or if this can be used to calculate the number of 'extra' EIPs per year?

Response:

Thank you for this comment. We wanted to indicate that this additional temperature is equivalent to the heat required to complete the EIP 12 times in the *Aedes* mosquitoes. However, we realized that the EIP is not a continuous process [in a scale of a year], and such an argument might create confusion. We have deleted the wording related to the generation and revised the wording now. Also, thank you for sharing the article on WNV- very useful findings.

“Therefore, the addition of 0.49°C temperature shortens the duration of EIP and thus increases the rate of virus dengue transmission”.