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Tomov et al. The role of children in the Bulgarian COVID-19 epidemic – a mathematical model study

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Dear editors,

Dear reviewers,

Thank you for your time to review our paper. We acknowledge that our paper might have some issues in conformity with the referees' comments. We have addressed them and revised the manuscript accordingly. We are confident that the typographic, linguistic and grammatical errors have been diligently corrected. This can be seen as highlighted and/or track changes. In addition, changes have been made concerning the English language.

We sincerely thank the three reviewers for their thorough and helpful comments and suggestions. We have addressed all of the raised queries and responded to all reviewers' comments.

We believe that you find these changes satisfactory, and the revisions have substantially improved the quality of the manuscript.

Reviewer #1:

Scientific Quality: Grade B (Very good)

Language Quality: Grade B (Minor language polishing)

Conclusion: Accept (General priority)

Specific Comments to Authors: Dear Author, thank you for sharing this research. I found it very interesting and well-written. No more change is needed. Best regards

- Thank you for the overall evaluation of our study. We are grateful for all the valuable comments.

Reviewer #2:

Scientific Quality: Grade B (Very good)

Language Quality: Grade A (Priority publishing)

Conclusion: Minor revision

Specific Comments to Authors: Summary: A model based analysis to explore the role of pediatrics in Covid-19 pandemic.

- Thank you for the overall evaluation of our study. We are grateful for all the valuable comments.

Comments: 1. The authors used the age range of 0-19 years to represent children. However, we know that this age range contains other groups, including infants and adolescents.

- Thank you for the valuable comment. We agree that the pediatric population comprises many subgroups, including infants and adolescents. However, the National portal for COVID-19 data in Bulgaria provides information about this subgroup 0-19 without data on the smaller groups.

2. CORE TIP: " This hypothesis and the other two we outlined as reasons for this age-restricted ...". The information given in the core tip must be clear and informative per se. It is unclear what are two reasons.

- We completely agree with the referee that the cited sentence is unclear. Therefore, we made changes to improve the clarity and cohesion of the core tip by adding the other hypotheses.

3. It has been demonstrated children with pre-existing comorbidities (cardiovascular diseases, cancer renal failure) are at risk for severe covid-19. It is suggested to add a sentence in this regard to the Introduction section and cite the following two papers for cancer:

- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7779976/> - <https://pubmed.ncbi.nlm.nih.gov/32765192/>

- Thank you very much for the suggestion. We have added both references.

4. COVID-19 and Children: " Fortunately, the course of the disease after the complex treatment (immunomodulatory therapy with iv immunoglobulins and corticosteroids, inotropic drugs and anticoagulants) was favorable in all patients." This part is not relevant to the study objective and can be safely omitted.

- We thank the referee for the comment. This sentence might not seem too relevant to the topic. However, we prefer to keep it in the text since we added 1-2 sentences to clarify and explain why it is appropriate for our paper.

5. Covid-19 and Children" " The airborne nature of the disease was also disputed [9]." This information is hard to understand. Please explain more.

- Thank you for the helpful note. We agree that this might not be clear. Thus, we added some explanation.

6. Covid-19 and children: " We use mathematical modeling (time series analysis) to question these claims in the case of Bulgaria and to show the price of the lack of policy in schools." it is suggested the authors express the study objective clearly (instead of "to question these claims").

- The referee is right to point out that "question these claims" is not a convincing way of presenting the objectives. We revised them accordingly.

7. " The third hypothesis is that the spread among children accelerates with the increasing R_0 of different dominating viral variants." What is R_0 ? It requires an explanation.

- Thank you for the valuable suggestion. We have added a sentence that explains what R_0 is.