Review of: "Analysis of the Spread of Covid-19 via Atangana-Baleanu Fractional Derivatives"

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Potential competing interests: No potential competing interests to declare.

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Derivatives

In the current work, the authors have considered the spread of the epidemic via Atangana-Baleanu Fractional derivatives. They present the mathematical analysis and formulation of a fractional model for the epidemic. The existence and uniqueness of the solution for the proposed model are proved. The study also investigates the existence of a disease-free equilibrium and analyzes its stability properties. To validate the theoretical results, they provide a numerical scheme for the fractional model and present various simulation results.

This paper can be considered for publication after the authors address the following comments and suggestions:

1. What are the advantages of the fractional derivative used in this paper in comparison to other fractional derivatives, such as the Caputo-Hadamard fractional derivative or ψ-Caputo fractional derivative?
2. Throughout the article, it should be written "Atangana-Baleanu-Caputo fractional derivative," not "the Atangana-Baleanu derivative." (Added hyphens for consistency)
3. The authors should give more explanations about the novelty of their contribution to the paper. For example, a similar work in this field has been done recently using fractional derivatives. https://doi.org/10.1002/mma.9501. The authors are asked to clarify the difference between their work and the mentioned article while reviewing the mentioned article.
4. The performance of the method presented in this paper should be compared with other recent existing methods in terms of advantages and disadvantages.
5. Please add some future research directions in the conclusion section.
6. The authors should augment the references list with the following related published papers:

- Meshfree moving least squares method for nonlinear variable-order time fractional 2D telegraph equation involving Mittag–Leffler non-singular kernel, Chaos, Solitons & Fractals, (2019), 389-399.
- A meshless method to solve nonlinear variable-order time fractional 2D reaction-diffusion equation involving Mittag-Leffler kernel, Engineering with computers, (2021), 731-743.