Journal Name:	**Journal of Advances in Mathematics and Computer Science**
Manuscript Number:	**Ms_JAMCS_110076**
Title of the Manuscript:	**Computational Nonlinear Dynamics: An Assessment of Optimal Control of COVID-19 in Akwa Ibom State, Nigeria**
Type of the Article	

	Reviewer's comment	Author's comment *(if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)*
Compulsory REVISION comments 1. **Is the manuscript important for scientific community?** (Please write few sentences on this manuscript) 2. **Is the title of the article suitable?** (If not please suggest an alternative title) 3. **Is the abstract of the article comprehensive?** 4. **Are subsections and structure of the manuscript appropriate?** 5. **Do you think the manuscript is scientifically correct?** 6. **Are the references sufficient and recent? If you have suggestion of additional references, please mention in the review form.** **(Apart from above mentioned 6 points, reviewers are free to provide additional suggestions/comments)**	In the manuscript, a deterministic epidemic model has been formulated using principles of Mathematical modelling of infectious diseases. This is a nonlinear system of differential equations coupled with three time-varying control functionals. The control functionals are flexible educational programmes, vaccination and treatment of COVID-19. An optimality system was derived using Pontryagin's Maximum principle, with some propositions on controllability criteria. Some forward-backward numerical solutions was executed in maple16 using validated datasets published by the Nigeria Centre for Disease Control (NCDC), peculiar to Akwa Ibom State. The efficiency analysis predicted that strategy I (a combination of educational intervention programmes and vaccinations of the exposed and susceptible individual) as the most efficacious and optimal control strategy. Comparatively, Strategy 1 with 96% efficiency on reducing the infected sub-population is more effective than strategy 4 (a combination of the three control states) with efficiency index of 91%. A continuous vaccination and educational awareness programme has been recommended for community health practitioners, and compliance to these policies by the citizens can eradicate the dreaded pandemic with minimal intervention cost in the state. Recommendations: I have read the manuscript thoroughly and I recommend the paper for publication in the journal subject to the following revision. The following changes should be made in the manuscript: 1. English should be improved. There are grammatical errors, the authors must be check the English carefully 2. The novelty of this work needs more explanation. 3. The motivation, main contributions and outlines of the manuscript should be presented after the introduction part 4. More clarifications on the proposed methodology would be better to help the reader in understanding. 5. I suggest adding a paragraph with limitations of the discussed approach as well as future directions in more details. 6. The introduction should be improved with the latest work as follows: i. 10.3934/math.2022630 ii. 10.3934/math.2022965 iii. 10.1016/j.chaos.2021.111429	
Minor REVISION comments 1. **Is language/English quality of the article suitable for scholarly communications?**	English should be improved. There are grammatical errors, the authors must be check the English carefully	
Optional/General comments		

PART 2:

	Reviewer's comment	Author's comment *(if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)*
Are there ethical issues in this manuscript?	*(If yes, Kindly please write down the ethical issues here in details)*	

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