

Review Form 3

Journal Name:	Advances in Research
Manuscript Number:	Ms_AIR_128172
Title of the Manuscript:	Application of the Susceptible Infectious Susceptible (sis) model for the appraisal of the disseminating potential of waterborne parasites in domestic water sources in Bamenda (Cameroon)
Type of the Article	

General guidelines for the Peer Review process:

This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty**', provided the manuscript is scientifically robust and technically sound. To know the complete guidelines for the Peer Review process, reviewers are requested to visit this link:

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PART 1: Comments

	Reviewer's comment	Author's Feedback <i>(Please correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)</i>
Please write a few sentences regarding the importance of this manuscript for the scientific community. A minimum of 3-4 sentences may be required for this part.	<ol style="list-style-type: none"> for understanding the dynamics of waterborne diseases in urban settings like Bamenda The global stability of the healthy state is achievable if the basic reproduction number remains below one, indicating that disease transmission can be controlled under specific conditions. The research calls for enhanced sanitation, water treatment, and public health interventions to reduce the spread of waterborne diseases, especially in regions where access to clean water is limited. 	
Is the title of the article suitable? (If not please suggest an alternative title)	While the paper is scientifically rich and detailed, some areas require better clarity and flow to improve readability. The following suggestions aim to enhance the structure: Title: The title is quite long. A more concise and clear title might improve the first impression. Something like: "Application of the SIS Model in Assessing the Spread of Waterborne Parasites in Bamenda's Domestic Water Sources" could be more direct while still maintaining the essence of the study.	
Is the abstract of the article comprehensive? Do you suggest the addition (or deletion) of some points in this section? Please write your suggestions here.	Abstract: The abstract is informative but too detailed. Summarize the key findings and outcomes more concisely. Try focusing more on the model's application, findings, and significance. For instance, the phrase "human activities and generally anthropogenic influences contaminate these water sources..." could be stated more clearly. Suggestion: "This study presents a Susceptible-Infectious-Susceptible (SIS) model to analyse the spread of waterborne diseases in Bamenda, Cameroon. The model explores contamination pathways through shared water sources such as taps, wells, and springs, revealing that human activities contribute significantly to the spread of intestinal parasites. Simulations demonstrate the role of waterborne pathogens in infecting the local population."	
Is the manuscript scientifically, correct? Please write here.	Yes	
Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form.	Add More Citations: Ensure that any sources that are directly referenced or closely followed in methodology are properly cited, especially in sections where high similarity is detected.	

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<p>Is the language/English quality of the article suitable for scholarly communications?</p>	<p>The structure and the idea of the research is good but needs clarity and paraphrasing. Repetition of words and letters are observed.</p>	
<p>Optional/General comments</p>	<p>Introduction: The introduction outlines the problem but could benefit from a clearer explanation of the SIS model. The link between waterborne diseases and the SIS model could be elaborated more in terms of specific dynamics (e.g., water contamination leading to infection, subsequent reinfection, etc.).</p> <p>Suggestion: A brief mention of the SIS model's application in other studies before discussing Bamenda would provide better context. For example, explain the SIS model briefly and how it applies to disease transmission via waterborne pathogens.</p> <p>This research paper proposes a Susceptible-Infectious-Susceptible (SIS) model for analyzing the spread of waterborne parasites in domestic water sources in Bamenda, Cameroon. The model considers multiple sources of water such as tap water, well water, and spring water, while also considering the transmission dynamics of both protozoa and helminths. The primary aim is to understand how anthropogenic activities and contamination of water sources contribute to the spread of diseases. Below is a detailed review of the paper, along with recommendations:</p> <p>1. Structure and Clarity:</p> <p>While the paper is scientifically rich and detailed, some areas require better clarity and flow to improve readability. The following suggestions aim to enhance the structure:</p> <ul style="list-style-type: none"> • Title: The title is quite long. A more concise and clear title might improve the first impression. Something like: "<i>Application of the SIS Model in Assessing the Spread of Waterborne Parasites in Bamenda's Domestic Water Sources</i>" could be more direct while still maintaining the essence of the study. • Abstract: The abstract is informative but too detailed. Summarize the key findings and outcomes more concisely. Try focusing more on the model's application, findings, and significance. For instance, the phrase "human activities and generally anthropogenic influences contaminate these water sources..." could be stated more clearly. <p>Suggestion: "This study presents a Susceptible-Infectious-Susceptible (SIS) model to analyze the spread of waterborne diseases in Bamenda, Cameroon. The model explores contamination pathways through shared water sources such as taps, wells, and springs, revealing that human activities contribute significantly to the spread of intestinal parasites. Simulations demonstrate the role of waterborne pathogens in infecting the local population."</p> <ul style="list-style-type: none"> • Introduction: The introduction outlines the problem but could benefit from a clearer explanation of the SIS model. The link between waterborne diseases and the SIS model could be elaborated more in terms of specific dynamics (e.g., water contamination leading to infection, subsequent reinfection, etc.). <p>Suggestion: A brief mention of the SIS model's application in other studies before discussing Bamenda would provide better context. For example, explain the SIS model briefly and how it applies to disease transmission via waterborne pathogens.</p> <hr/> <p>2. Methodology:</p> <ul style="list-style-type: none"> • Assumptions and Notation: The assumptions section is well-explained, but it could be more concise. Some terms (e.g., contact rate, recovery rate, and death rate) are mentioned without clear operational definitions. Clarifying the units and the nature of these rates (e.g., daily or yearly) would make the methodology more transparent. 	

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- **Mathematical Framework:** The equations and systems are well-presented but might be too technical for a broader audience. Consider explaining the significance of the variables (e.g., S, I, R, W) more explicitly for those unfamiliar with mathematical models.

Suggestion: After introducing the model, a simple **example** of how the model works (perhaps using real data from Bamenda) could help readers better understand the context of the system of differential equations. Visual aids such as flow charts or diagrams could also clarify the process.
- **Incorporating Real Data:** When discussing parameters like infection rates, recovery rates, and pathogen decay, it would be helpful to clarify how these parameters are **estimated** from local data or literature. A table summarizing the **model parameters and their sources** would improve transparency.

3. Results and Discussion:

- **Simulation Results:** While the results of the SIS model are discussed, the paper could better explain the **implications of these results** for policy and public health in Bamenda. The focus on simulation data is great, but a clearer interpretation of what these numbers mean in terms of real-world impact (e.g., how the spread could be mitigated, or areas with the highest risks) could be valuable.
- **Figures and Tables:** The inclusion of **Figures** (like the schematic illustration of the SIS model) is helpful, but some figures need clearer **legends and labels**. For example, Figure 1 is referenced but not clearly explained in the text. Additionally, ensure that **table titles** are descriptive.

Suggestion: A specific table or graph summarizing the comparison between infected individuals in different water sources or geographic areas would help visualize the findings.

4. Sensitivity Analysis:

- The paper mentions a **sensitivity analysis** but doesn't provide sufficient detail on the methodology or the results. A deeper explanation of which parameters were tested and how they affect the model's outputs (such as changes in transmission rate, water contamination, etc.) would add depth.

Recommendation: Provide more detail on the sensitivity analysis methodology, such as the range of values used for each parameter, and show how changes in specific parameters (e.g., pathogen decay rate or person-to-person infection rate) impact the model's predictions.

5. Conclusion and Recommendations:

The **conclusion** correctly summarizes the findings and suggests that a low basic reproduction number (R_0) indicates disease control. However, there could be more emphasis on **practical public health recommendations**.

- **Policy Implications:** It would be valuable to provide concrete suggestions for **public health interventions** or **policy actions** based on the model results (e.g., water treatment, sanitation

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	<p>improvements, vaccination strategies).</p> <p>Recommendation: Discuss potential real-world interventions that could lower the R_0, such as better water treatment infrastructure or community education programs for maintaining clean water sources.</p> <hr/> <p>Final Recommendations:</p> <ol style="list-style-type: none"> 1. Clarity and Structure: The paper would benefit from improved organization. Consider breaking it down into more digestible sections and summarizing the methodology and results more clearly. 2. Further Explanation of Parameters: Provide more details on how parameters like infection rates are estimated, particularly in the Bamenda context. 3. Visual Aids: Add more diagrams or flowcharts to explain how the model works and to visualize key results. 4. Simplicity in Presentation: For non-specialist readers, simplify some of the more technical sections, especially the mathematical models. 5. Model Validation: Include more details on model validation—how well does the model predict actual outcomes in Bamenda or other regions? <p>Incorporating these improvements would make the paper more accessible, scientifically robust, and aligned with best practices for epidemiological modeling.</p>	
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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?	<i>(If yes, Kindly please write down the ethical issues here in details)</i>	

Reviewer Details:

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