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REVIEWER'S REPORT

Manuscript No.: IJAR-55781

Title: Assessing Malaria and Typhoid Fever Trends Using Correlation and Covariance: Case Study of Adamawa Region (Cameroon)

Recommendation:
Accept as it is .....
Accept after minor revision.....
Accept after major revision .....
Do not accept (*Reasons below*).....

Rating	Excel.	Good	Fair	Poor
Originality		-		
Techn. Quality		-		
Clarity		-		
Significance		-		

Reviewer Name: Dr J Raja

Detailed Reviewer'sReport

Overall Assessment

This manuscript offers a valuable statistical contribution to epidemiological surveillance by examining the dynamic relationship between malaria and typhoid fever through correlation and covariance-based time series methods. The study is well-motivated, technically sound, and relevant for public health planning in Cameroon and similar contexts.

Strengths

1. Methodological Rigor
   - The use of stationarity tests (ADF and KPSS) combined with fractional differentiation demonstrates a high level of technical competence.

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- The combination of correlation, cross-correlation, rolling correlation, covariance, and rolling covariance offers a comprehensive analytical framework rarely applied in tandem in similar studies.

2. Data Relevance and Scope
   - Weekly data over four years (2021–2024) provides sufficient temporal depth to justify time series modeling.
   - Use of official Ministry of Public Health data enhances the reliability of findings.
3. Clear Presentation of Results
   - Descriptive statistics and regression results are well reported.
   - Visualizations support the statistical interpretations effectively.
4. Practical Implications
   - The study meaningfully links statistical findings to disease monitoring, resource allocation, and surveillance strategies.

Weaknesses and Areas for Improvement

1. Methodological Justification
   - The choice of fractional differentiation over classical differencing should be better justified, especially for readers unfamiliar with this approach.
   - A brief comparison or sensitivity analysis could strengthen confidence in this choice.
2. Interpretation vs Causality
   - Although the paper acknowledges limitations regarding causality, some interpretations (e.g., contemporaneous relationship) risk being read causally. This should be more explicitly framed as association-only.
3. Visualization and Statistical Inference
   - Figures would benefit from confidence bands or significance thresholds, especially for cross-correlation and rolling measures.
   - Clarify whether any statistical significance testing was applied to correlation coefficients.
4. Literature Integration

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- While the literature review is extensive, it is somewhat descriptive. A more analytical synthesis contrasting this study with existing methods (e.g., wavelets, ML-based approaches) would enhance scholarly depth.

5. Limitations Section
    - The limitations are acknowledged but could be expanded to include data quality issues (e.g., reporting bias, underreporting, diagnostic accuracy).

Contribution to the Field

This study stands out by jointly applying correlation and covariance frameworks, including rolling and lag-based variants, to epidemiological time series in a low-resource setting. It provides a replicable analytical pipeline that can be applied to other disease pairings and regions.