

Review of: "Emerging Omicron Subvariants EG.5 and BA.2.86: Implications for COVID-19 Immunity and Surveillance"

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Potential competing interests: No potential competing interests to declare.

Your abstract effectively summarizes the study's focus on the Omicron sublineages EG.5 and BA.2.8, highlighting their unique mutations, transmissibility, and the ongoing need for genomic surveillance to guide public health strategies. It offers a clear view of the study's objectives, including variant emergence mechanisms, vaccine effectiveness, and broader public health implications.

To further refine it:

1. **Shorten Sentences:** Some sentences are long and could be more concise.
2. **Highlight Key Findings:** Mention any significant conclusions regarding variant impacts or vaccine efficacy.
3. **Clarify Specific Contributions:** Emphasize the novel insights or unique contributions this study adds to existing research on SARS-CoV-2 variants.

Your background section provides a comprehensive overview of the COVID-19 pandemic and SARS-CoV-2. To enhance clarity and flow, here are some recommended sections for improvement:

1. Clarity and Conciseness

- **Improve flow:** The background could benefit from tighter, more concise sentences, especially in sections explaining viral structure and the immune response. For example, the description of the genome and proteins could be broken down more clearly.
- **Avoid redundant details:** Some details are repeated (e.g., the structure of the virus). Avoid over-explaining points that have already been covered.

2. More Focus on Epidemiology and Transmission

- **Transmission:** Expand on the modes of transmission with more specific examples (e.g., asymptomatic transmission, aerosol spread) and recent insights from scientific literature.
- **Virus evolution:** Consider including a brief mention of how the virus has evolved and led to the emergence of variants, setting up the discussion for the rest of the paper.

3. Enhance the Historical Context

- **Outbreak timeline:** Briefly summarize the key stages of the pandemic's global spread and the major responses from different regions, instead of focusing only on the Wuhan outbreak. This will provide a broader context for readers.
- **Public health response:** The section on strategies to control viral spread could be expanded to briefly mention other mitigation strategies like mask mandates, vaccination campaigns, and global coordination efforts.

4. Update Scientific Understanding

- **Immunity and vaccines:** Update the vaccine discussion with more detail on current vaccine strategies, including how vaccines have been adapted for new variants like Omicron, and challenges in vaccine distribution.

5. Further Literature Integration

- **Cite additional sources:** Incorporate more references from recent studies on the viral lifecycle, immune response, and vaccination, especially those that highlight significant breakthroughs or challenges.

Your methodology section is clear and detailed. To improve clarity and completeness, consider the following recommendations:

1. Search Strategy

- **Detail Search Terms:** Include a brief explanation of why specific MeSH terms were chosen and how they were combined in the search (e.g., Boolean operators).
- **Inclusion/Exclusion Criteria:** Clearly define the inclusion and exclusion criteria used to select studies. Specify the types of studies included (e.g., clinical trials, observational studies) and any relevant time frame or geographical focus.

2. Data Extraction

- **Standardization:** Explain how data extraction was standardized. For example, describe any tools or forms used to ensure consistency in data extraction.
- **Quality Assessment:** Include a brief mention of how the quality or bias of the included studies was assessed, if applicable.

3. Data Synthesis and Analysis

- **Synthesis Method:** Describe the method used for synthesizing the data (e.g., thematic analysis, meta-analysis) and how themes and subthemes were determined.
- **Data Integration:** Clarify how data from different sources (e.g., genomic sequences, epidemiological data) were integrated and analyzed together.

4. Genomic and Epidemiological Data Analysis

- **Genomic Analysis:** Provide more detail on the genomic analysis approach, including any specific tools or software used for sequence analysis and mutation identification.
- **Epidemiological Evaluation:** Specify the methods used to analyze epidemiological data, such as statistical techniques or models for assessing prevalence and spread.

5. Ethical Considerations

- **Ethical Approval:** Mention any ethical considerations or approvals needed for data use, especially if human or animal data was involved.

6. Limitations

- **Acknowledge Limitations:** Briefly address potential limitations of your methodology, such as limitations in data availability, language barriers, or publication bias.

7. Update Sources

- **Current Information:** Ensure that the sources mentioned, such as GISAID and WHO, are up-to-date and relevant to the current understanding of the Omicron subvariants.

Your section on the dynamics of SARS-CoV-2 variants provides a detailed overview of the evolution of the virus and its subvariants. Here are some recommendations for improving clarity, organization, and completeness:

1. Clarify Classification

- **Variants Classification:** Clearly explain the classification system of SARS-CoV-2 variants (VOCs, VOIs, VUMs) and briefly mention what each category means in terms of public health implications.

2. Consolidate Variant Descriptions

- **Streamline Information:** Combine similar information about each variant to avoid repetition. For instance, mutation effects, transmission, and vaccine responses can be grouped together for each variant.
- **Highlight Key Mutations:** Emphasize key mutations that significantly impact transmissibility, immune escape, and clinical severity.

3. Update on Omicron Subvariants

- **Sublineages:** Provide a clear distinction between the main Omicron variant and its sublineages, summarizing their key

mutations and impacts concisely.

- **Comparative Analysis:** Include a brief comparative analysis of the different Omicron sublineages to highlight their unique features and clinical significance.

4. Include Recent Data and References

- **Recent Developments:** Ensure the latest data and findings are incorporated, especially for emerging variants and sublineages like EG.5 and BA.2.86.
- **Cite Up-to-Date Sources:** Include references from recent studies or reports to support the claims about the spread and impact of new variants.

5. Expand on Global Impact

- **Global Spread:** Include a brief discussion on how the spread of variants has affected different regions globally, including variations in vaccine efficacy and public health responses.

6. Focus on Clinical Implications

- **Clinical Impact:** Summarize the clinical implications of the various variants, including changes in disease severity, vaccine effectiveness, and potential treatment challenges.

7. Improve Flow and Readability

- **Organize Information:** Structure the section logically, starting with a general overview of SARS-CoV-2 variants, then moving to specific variants and their characteristics.
- **Subheadings:** Use subheadings to separate different sections (e.g., "Variant Classification," "Alpha Variant," "Omicron Sublineages") for easier navigation.