Review of: "Assessment of COVID-19 from Features Extraction of Exhaled Breath Using Signal Processing Methods"

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Potential competing interests: No potential competing interests to declare.

1. The study includes a relatively small sample size with 20 COVID-19-positive and 20 COVID-19-negative participants. The selection of participants is limited to CAT 2 COVID-19 patients, which may not represent the entire spectrum of COVID-19 cases. Different stages of the disease may exhibit distinct breath patterns.
2. The study does not include an external validation dataset. External validation is crucial to assess the generalizability and reliability of the developed algorithm when applied to new, unseen data.
3. The clinical relevance of these differences needs to be established. How well the identified features correlate with the actual clinical condition and severity of COVID-19 remains unclear.
4. Some aspects of the methodology, especially the signal preprocessing and feature extraction algorithms, are not thoroughly explained.
5. Providing more details on the algorithms and their parameters would enhance the reproducibility and transparency of the study.
6. The article lacks discussion on ethical considerations, such as informed consent, patient privacy, and ethical approval for conducting the study. This information is crucial for understanding the ethical implications of the research.
7. The article does not compare the proposed breath analysis method with standard diagnostic methods for COVID-19, such as RT-PCR.
8. The article focuses heavily on specific features like slope e2, area e2, and the intersection angle of expiration and inspiration phases. It would be beneficial to discuss the biological significance of these features and explore the potential contribution of other features.
9. The article lacks a comprehensive discussion of limitations, such as potential confounding factors, variations in breath patterns due to comorbidities, or the influence of environmental factors.