Review 2: "Scent dog identification of SARS-CoV-2 infections, similar across different body fluids"

Catherine Reeve\textsuperscript{1}

\textsuperscript{1}Lecturer, Queen's University Belfast, Psychology, United Kingdom

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**RR:C19 Evidence Scale** rating by reviewer:

- **Reliable.** The main study claims are generally justified by its methods and data. The results and conclusions are likely to be similar to the hypothetical ideal study. There are some minor caveats or limitations, but they would/do not change the major claims of the study. The study provides sufficient strength of evidence on its own that its main claims should be considered actionable, with some room for future revision.

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Furthermore, the authors went to great lengths to ensure the safety of the researchers and the dogs, including testing the dogs for COVID-19 after each day of testing.

However, a weakness of the study is that the authors provide very few details on the progression from training to testing sessions and no details regarding what kind of samples occupied each of the seven sample positions on each trial. For example, was there 1 SARS-CoV-2-positive sample per trial with the remaining 6 positions containing SARS-CoV-2-negative samples? Alternatively, did the six positions contain control samples (the same sample collection materials devoid of the actual biological sample), or were they simply empty? These details have implications for the calculation of performance parameters as one could argue that the absence of an indication behavior on an empty hole is not a true negative.

The authors also highlight that, unlike their first study, this study included SARS-CoV-2-positive samples from people that are asymptomatic or with few symptoms, as well as SARS-CoV-2-negative samples from people with other respiratory conditions. However, the reader must review the supplementary material to be made aware that only three samples were provided by people that were positive for SARS-CoV-2 yet asymptomatic, and that these samples were used during a “transfer to urine and sweat phase” that is not described anywhere. The dogs’ performance with these samples is not described at any point. Only four samples were provided by people that tested SARS-CoV-2-negative but had other respiratory conditions and the results suggest that these samples were presented simultaneously alongside SARS-CoV-2-positive samples and SARS-CoV-2-negative samples. Although examining the dogs’ performance with these samples is not an explicit objective of the study, the study would benefit from the authors presenting these findings independently, if only descriptive, as there are currently no studies examining how dogs might perceive asymptomatic samples nor are there studies examining their ability to discriminate between COVID-19 and other respiratory conditions.

Taken together, the written presentation of this paper could be clearer, and more details on the sample presentation would allow a more thoughtful interpretation of the results. Despite these shortcomings, the results show strong evidence that the dogs generalized detection of inactivated samples to non-inactivated samples and different sample types. These findings support the idea that dogs can detect a SARS-CoV-2-specific odor. This study is valuable in advancing the use of COVID-19 detection dogs as a screening tool for SARS-CoV-2 infections.