AB035. Comparative sensitivity of different self-sampling methods for SARS-CoV-2 RT-PCR testing

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Background: Alternative sampling methods allow for the possibility for self-collection to facilitate SARS-CoV-2 testing in ambulatory care settings. Self-sampling has been well defined for influenza in community settings, but remains unclear in the context of coronavirus disease (COVID-19). A systematic review and meta-analysis assessing the comparative sensitivity of different self-sampling methods for SARS-CoV-2 testing is needed.

Methods: In this meta-analysis, we systematically searched 4 different databases and 2 preprint platforms. We included original clinical studies that examined the performance of nasopharyngeal swabs and any additional respiratory specimens for the diagnosis of SARS-CoV-2 infection among individuals presenting in ambulatory care. Studies without data on paired samples, or those that only examined different samples from confirmed SARS-CoV-2 cases were not useful for examining diagnostic performance of a test and were excluded. Sensitivity of the diagnostic test was examined using random effects models.

Results: A total of 26 studies including 9684 participants were included. Using nasopharyngeal swabs as the gold standard, pooled nasal and throat swabs gave the highest sensitivity of 97% [95% confidence interval (CI): 93–100%], whereas lower sensitivities were achieved by nasal swabs (86%, 77–93%), saliva (85%, 75–93%) and gargle (85%, 65–98%), and a much lower sensitivity by throat swabs (68%, 35–94%). Comparison between health-care-worker collection and self-collection for pooled nasal and throat swabs and nasal swabs showed comparable sensitivity.

Conclusions: Our review suggests that pooled nasal and throat swabs would be the best alternative sampling approach to nasopharyngeal swabs, for diagnosis of SARS-CoV-2 infection in ambulatory care. Saliva, gargle and nasal swabs gave a comparably good and still reasonable sensitivity and are clinically acceptable alternative sampling approaches. All these alternative sampling approaches appeared as a feasible option to facilitate self-collection of specimens and scaling up of diagnostic testing programs. Throat swabs gave a much lower sensitivity and should not be recommended.

Keywords: SARS-CoV-2; coronavirus disease (COVID-19); diagnosis; sampling approach; nasal and throat swab

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Footnote

Conflicts of Interest: BJC has consulted for Roche, Sanofi Pasteur, GSK, AstraZeneca and Moderna. The other authors have no conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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