



Diagnostic Accuracy of Saliva Reverse Transcription Polymerase Chain Reaction (RT-PCR) Compared to Nasopharyngeal Swab Reverse Transcription Polymerase Chain Reaction (RT-PCR) in the Detection of SARS-CoV-2 in Pediatric Patients ages 0-18 years old : A Meta-Analysis

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Introduction

Saliva sampling is a novel testing technique that can be a viable alternative to nasopharyngeal swab in the diagnosis of COVID-19. It has the advantage of being simple and painless to obtain, requiring no qualified personnel to obtain the sample and even possibly allowing self-sampling. However, comparisons between real-time Polymerase Chain Reaction (PCR) results from salivary and nasopharyngeal samples show varying results.

Objective

To determine the diagnostic accuracy of Saliva RT-PCR in the detection of SARS-COV-2 in pediatric patients ages 0-18 years old, compared to the nasopharyngeal RT-PCR swab.

Methodology

A metanalysis was done to synthesize the diagnostic accuracy of saliva RT-PCR compared to the nasopharyngeal RT-PCR in the detection of SARS-COV 2 in pediatric patients ages 0-18 years old. Five studies were analyzed using the "midas" command of STATA14.

Results

The World Health Organization's acceptable sensitivity and specificity for products used in COVID-19 diagnostics is $\geq 80\%$ and $\geq 97\%$ respectively. The results of this metanalysis showed the pooled sensitivity of Saliva RT-PCR as compared to the Nasopharyngeal RT-PCR is at 87% (81-92% at 95% CI) and the pooled specificity is at 97% (95% CI: 96-98%). Only one study showed a low positive predictive value which was attributed to inclusion of asymptomatic subjects

Conclusion and Recommendation

This metanalysis demonstrates that saliva can be used as an alternative specimen for SARS-COV-2 diagnostic testing in children. Aside from the acceptable pooled specificity and sensitivity, the use of saliva offers several advantages. However, there are limitations identified considering the number of studies included. The authors recommend to include more studies for future metanalysis research, to further increase sample size, and to include both symptomatic and asymptomatic pediatric age group participants.

Keywords

COVID-19, SARS-COV-2, Nasopharyngeal RT-PCR, Saliva RT-PCR, Children, 0-18 years old