

## Peer Review Report

# Review Report on Association between rapid antigen detection tests and real-time reverse transcription-polymerase chain reaction assay for SARS-CoV-2: a systematic review and meta-analyses

Review, Int J Public Health

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### EVALUATION

#### **Q 1** Please summarize the main theme of the review.

The study aimed to assess the association between rapid antigen detection tests and real-time reverse transcription-polymerase chain reaction assay for severe acute respiratory syndrome coronavirus satisfactory overall false positive rate (0.01, 95%CI: 0.00 – 0.01) for the RADTs compared to RT-PCR. In the stratified analysis, we also found false positive rates of RADTs not increased when Ct values increased of RT-PCR (Ct<40, 0.01, 95%CI: 0.00-0.01; Ct ≥40, 0.01, 95%CI: 0.00-0.01). All these were derived after examining 35 studies.

#### **Q 2** Please highlight the limitations and strengths.

##### Strengths

First systematic review and meta-analysis that explores the relationship between RADTs and Ct value cut-offs. In the meta-analysis, heterogeneity exists if the sample estimates for the population risk were of different magnitudes and used the random effect model when I square statistics were 90.28%, 91.78%, and 91.62% for Ct values <40, Ct values ≥40, and overall, respectively.

Included all relevant studies from a global database, which are accepted with a relatively high level of evidence. Excluded studies with no control groups to increase comparability and decrease possible heterogeneity.

A subgroup meta-analysis was performed to analyze the real association that controlled the independent Ct values.

##### Limitations

Firstly, because sources of reagents are very complex and no single diagnosis standard exists, the bias estimated is inevitable. Second, ordinary meta-analyses on efficacy render high-quality evidence from randomized controlled trials only. However, it is impossible to randomize people into 'RADTs' and 'RT-PCR' categories. Third, few studies considered other potential confounding factors. Finally, when using the GRADE approach to evaluate the quality of the evidence for each outcome, the current evidence from all selected studies was moderate in imprecision.

#### **Q 3** Please provide your detailed review report to the authors, structured in major and minor comments.

I have observed as following after going through the paper:

The authors stated no language restriction was applied during the search. But they have not stated how much English and other language literature they could derive and what were the analysis plan for those.

The authors did not include the PRISMA checklist at the end of the manuscript or as a supplement.

It's better not to state the author's name in the article itself like "Yu-Pei Yang and Zhu Liduzi Jiesisibieke were independently responsible for the entire In review selection process". As the study is authored by all so all should be responsible. Avoid such remarks in the manuscript.

It's better to include the selection process, and how studies were screened and then selected in the methodology itself, not in the results section. There should be minimum repetition between tables/figures and text.

Kindly state the salient findings of the study briefly in the conclusion.

**PLEASE COMMENT**

**Q 4** Does the reference list cover the relevant literature adequately and in an unbiased manner?

Yes

**Q 5** Does this manuscript refer only to published data? (unpublished data is not allowed for Reviews)

Yes.

**Q 6** Does the manuscript cover the issue in an objective and analytical manner

Yes.

**Q 7** Was a review on the issue published in the past 12 months?

No.

**Q 8** Does the review have international or global implications?

Yes

**Q 9** Is the title appropriate, concise, attractive?

Yes

**Q 10** Are the keywords appropriate?

Yes

**Q 11** Is the English language of sufficient quality?

Yes

**Q 12** Is the quality of the figures and tables satisfactory?

Yes.

**QUALITY ASSESSMENT**

**Q 13** Quality of generalization and summary



**Q 14** Significance to the field



**Q 15** Interest to a general audience



**Q 16** Quality of the writing



**REVISION LEVEL**

**Q 17** Please take a decision based on your comments:

Minor revisions.