



# UNCOVER

Usher Network for COVID-19  
Evidence Reviews

Review: What is the effectiveness of face masks in preventing respiratory transmission in the community?

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# **What is the effectiveness of face masks in preventing respiratory transmission in the community?**

## **Background**

Community face mask use was part of successful control policies in China, South Korea and Vietnam, but it is not possible to disentangle their separate contribution to reducing transmission. This rapid review was carried out to establish whether there is evidence for the use of face masks in the general population to reduce the spread of infection with SARS-COV-2.

## **Methods**

UNCOVER have compiled a database of reviews from websites of partners taking part in the WHO Evidence Collaborative, and have so far identified around 170 Covid-19 evidence reviews, including some on use of facemasks.

Given the timeframe for the original rapid review, and in order to avoid duplication of effort, we searched this register, contacted experts in the field, and searched for prior reviews or evidence summaries on facemasks to prevent transmission of infection. We identified 14 prior reviews or summaries, appraised them for scope and quality, and selected the three most recent, on-topic and robust quality [Jefferson 2020, Brainard 2020, Xiao 2020] for updating and reanalysis.

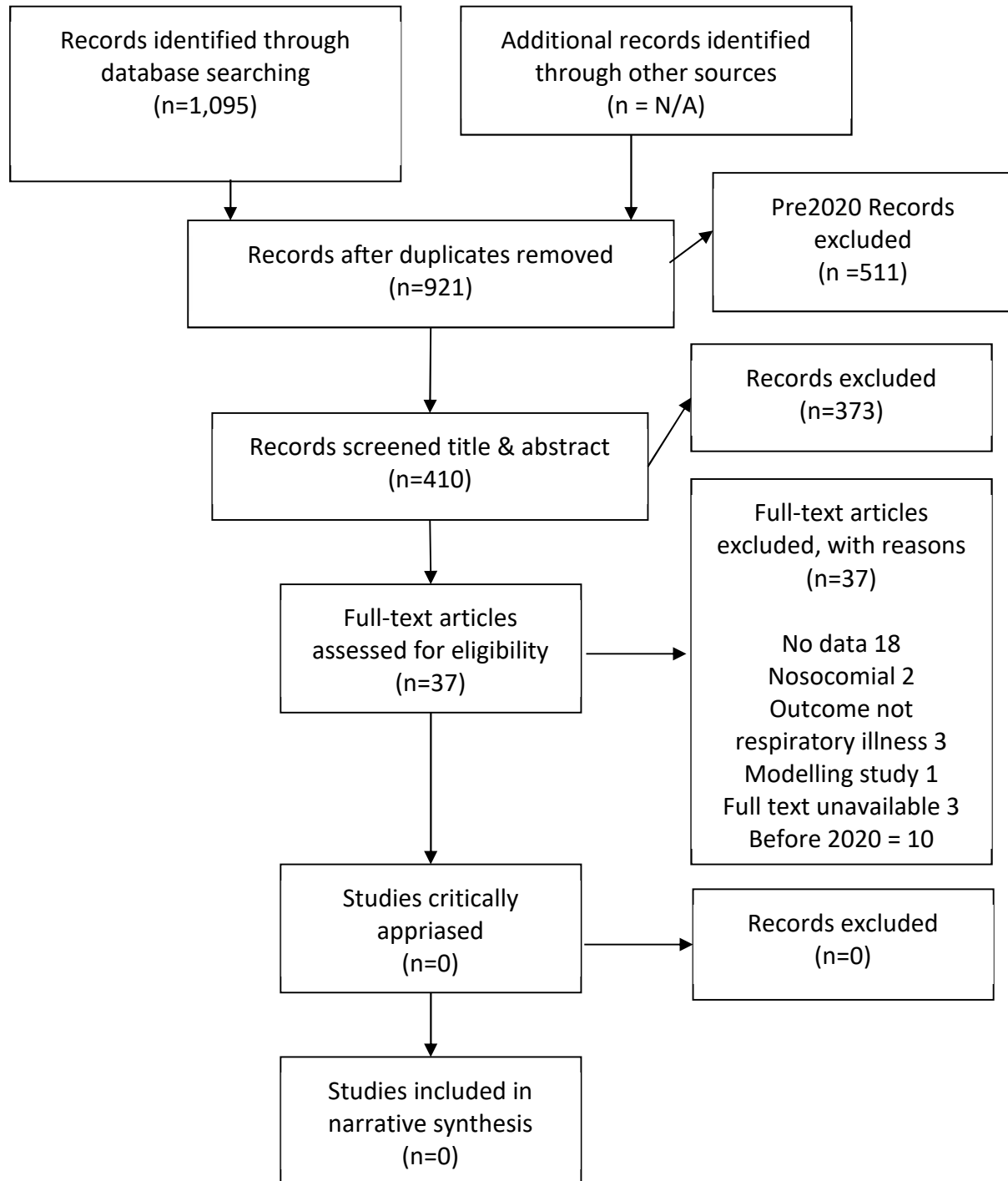
For this review, we adapted rapid review methods outlined by the Cochrane Collaboration, and built on an earlier UNCOVER rapid review on facemasks (UNCOVER-003-01).

We re-ran the searches reported in the 3 selected reviews on 6 April (Search 1) and again on 16 April 2020 (Search 2). We searched the databases used in the prior reviews (PubMed, Medline, Embase, Scopus, CENTRAL, CINAHL) and augmented the methods by including a search for pre-prints on medRxiv and bioRxiv. These searches were carried out by one reviewer (MD).

## **Screening**

From the updated search results set, we excluded publications from before 2020, nosocomial settings, modelling data, animal models, or providing commentary but no data. All component studies of the three systematic reviews were included in this update. There were no language limitations as part of the search, but due to time and resource constraints, only English- and Chinese-language publications were included in the analysis.

Screening was shared between three reviewers (MG, XL, WX) for Search 1, and between two reviewers (EM, LG) for Search 2. Each new title, abstract and full text was screened by one reviewer, and exclusions by a second reviewer. References of previous systematic reviews were screened by two reviewers. The PRISMA flow diagram below shows the cumulative results of Search 1 and Search 2:



No new primary studies meeting the inclusion criteria were identified during either search. Search 2 identified one further systematic review and meta-analysis (Long 2020) which was included in our analysis.

## Results

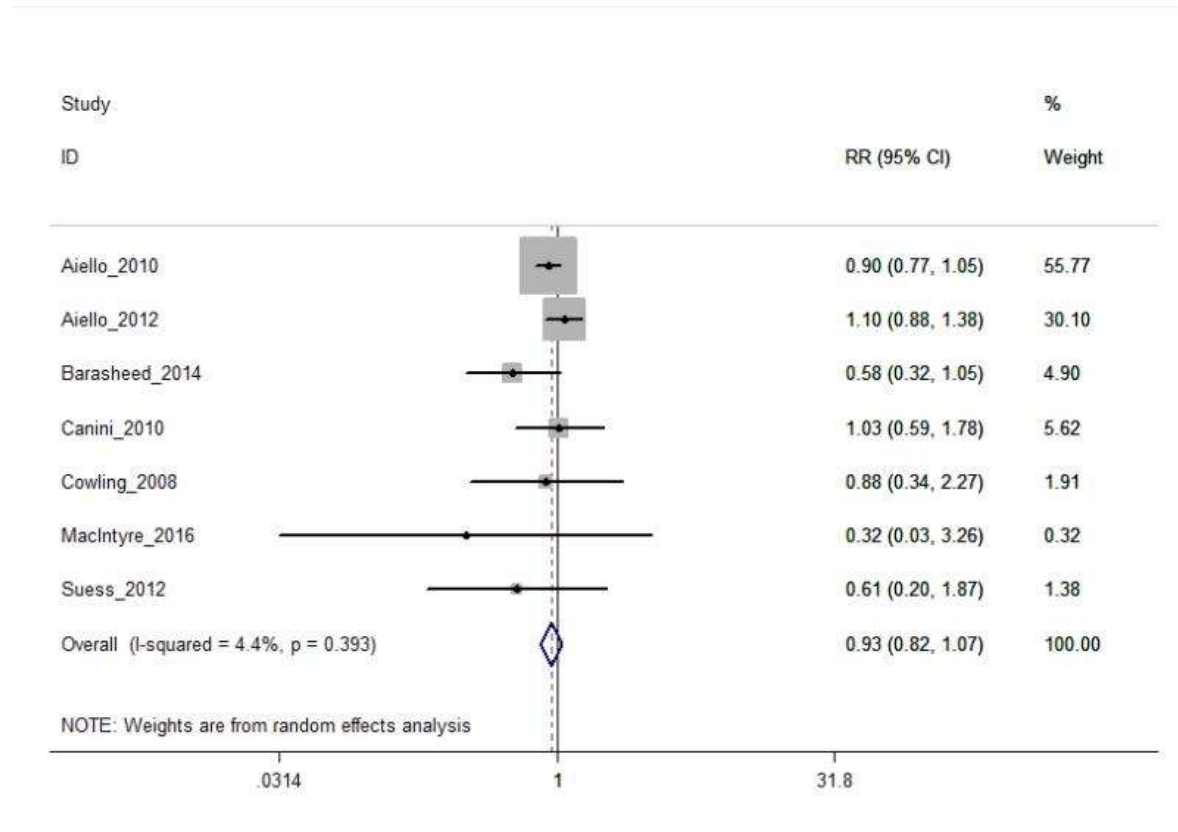
The key findings from this rapid review were:

Of the four high quality recent reviews we scrutinised in detail, three included only RCTs [Jefferson 2020, Xiao 2020, Long 2020], whereas Brainard 2020 included population studies too. We ran updated literature searches for these reviews to identify new studies. No new studies meeting inclusion criteria were identified.

All component studies of the four systematic reviews were included for analysis in this update.

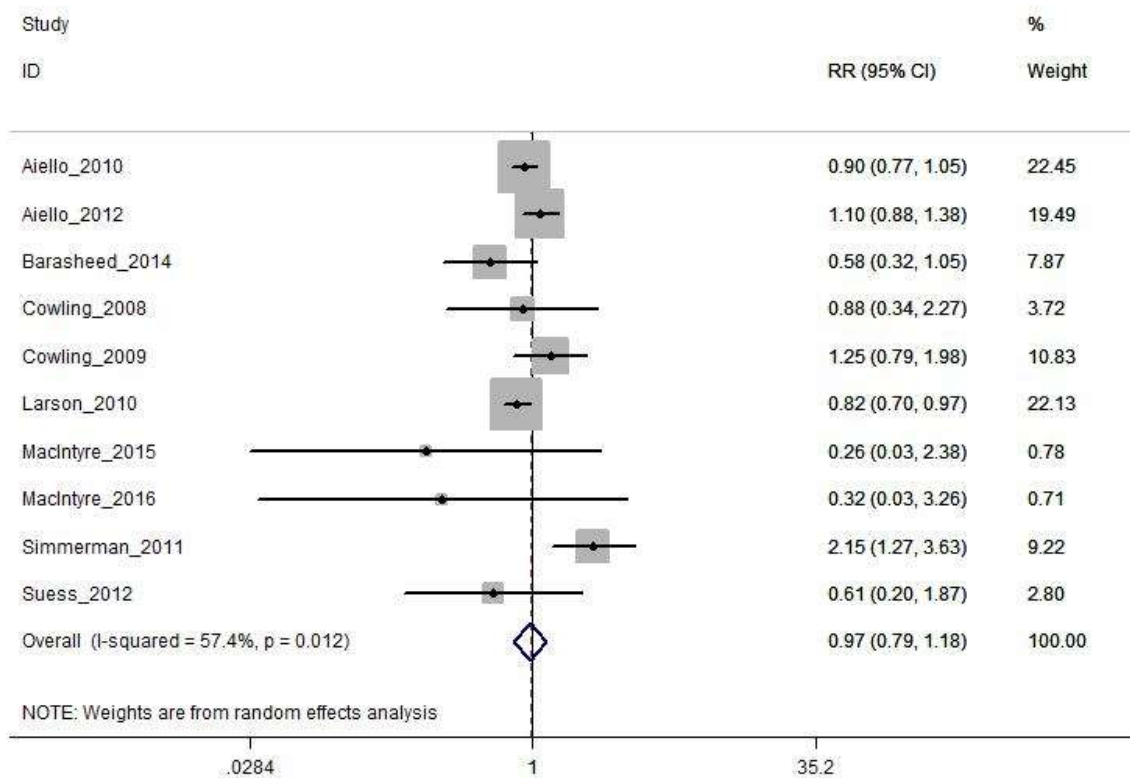
Jefferson 2020 included 9 RCTs (7 in the general population and 2 in health care workers) and reported that there was no reduction of Influenza-like illness (ILI) for masks compared to no masks [Random effects OR (95% CI): 0.93 (0.83, 1.05)].

We re-ran a random effects meta-analysis restricting to the 7 RCTs conducted in the general population from Jefferson 2020 and also found no significant reduction of ILI [OR (95% CI): 0.92 (0.87, 1.07)]. Risk of bias analysis using the Cochrane tool done by Jefferson et al indicated that there was high or unknown risk of bias in relation to performance, detection and reporting bias.



**Figure 1. Random effects meta-analysis of 7 RCTs related to use of facemasks in the general population synthesised in Jefferson-2020.**

Xiao 2020 evaluated environmental and personal protective measures for pandemic influenza in non-healthcare settings. They ran a fixed effect meta-analysis of 10 RCTs of community use of face masks (with or without hand hygiene measures) and reported no significant reduction of ILI [Fixed effect OR (95% CI): 0.92 (0.75, 1.12)]. We repeated the analysis using random effects meta-analysis and the result was similar [Random effects OR (95%CI): 0.97 (0.79, 1.18)]. The study quality of the included studies was evaluated using GRADE by Xiao et al and the overall assessment of the quality was classified as low.



**Figure 1. Random effects meta-analysis of 10 RCTs related to use of facemasks in the community synthesised in Xiao-2020.**

Brainard 2020 included all study designs on facemasks and similar barriers to prevent respiratory illness. Based on random effects meta-analyses on RCTs, they concluded that wearing face masks can be very slightly protective against primary infection from casual community contact, but this was not significant, and the evidence was classified as low certainty-evidence using the Cochrane risk assessment [Random effects OR (95% CI): 0.94 (0.75, 1.19)]. Similar were the findings for the prevention of household infections when both infected and uninfected members wear face masks.

Long 2020 included RCTs and non-randomised controlled studies comparing the effectiveness of N95 respirators against surgical masks in preventing the spread of influenza (it did not report the effectiveness of any kind of mask when compared to no mask). Only one of the six included studies took place in a household or community setting, and the remaining primary studies (in hospital settings) did not fit the criteria for inclusion in our analysis.

## Conclusion

Based on the evidence from four recent systematic reviews and meta-analyses wearing face masks in the community is not significantly associated with a reduction in ILI and the overall assessment of the quality was classified as low.

## Keywords

Masks, Respiratory Protective Devices, Personal Protective Equipment, Primary Prevention.

The UNCOVER network is committed to responding quickly and impartially to requests from policymakers for evidence reviews. This document has therefore been produced in a short timescale and has not been externally peer-reviewed.

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