LES 20.1 Brief | 24 March 2023

Effectiveness of public health and social measures on reducing COVID-19 transmission, deaths and other negative outcomes in non-healthcare community-based settings

Mask mandates, social gathering, travel restrictions, and school and workplace closures are among some of the many public health and social measures, or PHSMs, governments and businesses have put in place over the last few years to reduce the spread of and deaths caused by COVID-19. We can now examine the effectiveness of these measures – for halting COVID-19 transmission and related deaths, as well as reducing other respiratory illnesses (e.g., influenza and respiratory syncytial virus, or RSV) and other negative health outcomes, particularly in non-healthcare community-based settings. This learning is essential as COVID-19 is expected to continue for years to come and as the world prepares for future, emerging crises.

This brief offers a high-level summary of key findings from the **COVID-19 Living Evidence Synthesis 20.1: Effectiveness of combinations of public health and social measures over time and across jurisdictions for reducing transmission of COVID-19 and other respiratory infections in non-healthcare community-based settings.** This brief will continue to be updated when new versions of the living evidence syntheses (LES) are made available. See the most up-to-date version of this brief, LES 20.1 and other LESs in the suite on the COVID-END website.

Methods
The findings are drawn from 72 synthesized studies that have different foci, risk of bias and country contexts:
- foci:
  - reducing COVID-19 transmission (53 studies)
  - reducing COVID-19 deaths (15 studies)
  - reducing transmission of other respiratory infectious diseases (6 studies)
  - reducing other negative outcomes (8 studies)
- risk of bias (i.e., the risk that features of the study design or conduct of the study will give misleading results): low (3 studies); moderate (26 studies); serious (25 studies); critical (18 studies)
- country: most are multi-country (44 studies), with the remainder focus on single countries (28 studies)

To keep in mind about the evidence identified
- Synthesizing evidence about public health and social measures (PHSMs) has to account for decision-makers needing to make difficult decisions with the best-available evidence at a moment in time
- PHSMs are designed for use in entire populations, which makes it hard or impossible to be evaluated in controlled settings where people are randomly allocated to different interventions, as is often done with clinical studies
- Informing decisions with the best-available evidence therefore requires using findings from studies conducted in real-world settings where people may do other things to reduce their COVID-19 risk, be exposed to misinformation, have different levels of use of the intervention and/or be evaluated across different stages of the pandemic
- Tools for assessing the risk of bias provide information about the risk that features of the study design or conduct will give misleading results
- These tools were designed primarily for use in clinical studies and don't consider the types of real-world evaluations included in this synthesis, but they still provide a way to recognize the reliability of specific conclusions about the effects of interventions

Public health and social measures (PHSMs) and their effectiveness for reducing COVID-19 transmission and deaths

Public health and social measures	Reducing COVID-19 transmission	Reducing COVID-19 deaths
Mask mandate/ requirement	Most effective or among the most effective based on eight multi-country studies	No evidence identified
Social gathering restrictions	Strongly effective based on nine multi-country studies	Consistently associated with reduced deaths in three multi-country studies
International travel restrictions	Strongly effective principally at the beginning of the pandemic based on five multi-country studies	Contradictory findings, from no significant effect or only a marginal effect based on two multi-country studies
Work-from-home or workplace closures	Moderately effective based on six multi-country studies	Contradictory findings, from reduced deaths to no effects in two multi-country studies
Business closures	Strongly effective based on four multi-country studies	Significant association with reduced deaths in two multi-country studies two studies in the U.S. and one study in India
School closures	Contradictory findings, from strongly effective based on four multi-country studies to weak or negligible effect in three multi-country and one study in Japan	Associated with reduced deaths in two multi-country studies but one multi-country study showed a non-significant effect
Stay-at-home/ lockdowns	Contradictory findings, from strongly effective in five multi-country studies to negligible effect in other two multi-country studies, the effect was weaker when implemented later in the pandemic	Contradictory findings, from a non-significant reduction in deaths in two multi-country studies to one multi-country study showing an initial rise of deaths up to day 20 of the intervention followed by reduced deaths
Other: • public transport bans • domestic travel restrictions • testing of only symptomatic people • public information campaigns • quarantine policies • contact tracing strategies • isolation policies	Low or negligible effectiveness per each of public transport bans, domestic travel restrictions, testing of only symptomatic people, and public-information campaigns	No effect or not statistically significant effects

When it comes to **reducing transmission of other respiratory infectious diseases (RIDs)**, several multi-country studies examining school closures, mask mandates, workplace closures, stay-at-home/lockdowns, public transport bans and domestic travel restrictions reported reductions in RIDs, however, these studies had either serious or critical risk of bias, so the findings are unreliable.

For **reducing other negative outcomes**, one multi-country study found associations of anxiety and depressive symptoms with stay-at-home requirements and international travel restrictions (stronger among males); and with gathering restrictions, school closures, cancelling public events, and domestic travel restrictions (stronger among females). Another study in China found that PHSMs were associated with a decrease in post-exposure prophylaxis prescriptions for protecting people at risk for Human Immunodeficiency Virus (HIV), decrease in HIV tests, decrease in HIV diagnoses and decrease in CD4 counts (Clusters of differentiation 4, or CD4, are glycoproteins that help in immune protection) in the first week during implementation of a package of PHSMs. While other studies showed negatives consequences of various PHSMs on mental health and well-being (a multi-country study, one in Australia, and the U.S.), those studies had serious or critical risk of bias so their findings are unreliable.

Reference: Vélez CM, Wilson MG, Song X, Waddell K, DeMaio P, Lavis JN. COVID-END PHSM LES Working Group. COVID-19 Living Evidence Synthesis 20.1: Effectiveness of combinations of public health and social measures over time and across jurisdictions for reducing transmission of COVID-19 and other respiratory infections in non-healthcare community-based settings. Hamilton: McMaster Health Forum, 10 February 2022.

McMaster University

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