Communication to promote and support physical distancing for COVID-19 prevention and control: a rapid review
(update, protocol)

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1.Background

1.1. The issue under consideration

This review focuses on communication to promote and support physical distancing to prevent and control COVID-19.

Definition of communication

Communication [*to promote and support the public health action of physical distancing*] will be defined in accordance with the taxonomy of the Cochrane Consumers and Communication Group (Hill, 2011; Kaufman 2017; Ryan 2016). 'Communication' refers to all approaches that influence the way that people interact with or participate in their health or health care. Approaches to communication include:

- Informing/educating

- Reminding

- Facilitating communication or decision making

- Enabling communication

- Acquiring skills

- Supporting behaviour change

- Being supported

- Involving the community in decision making associated with the promotion of physical distancing e.g. engaging community leaders to help tailor messages to hard-to-reach groups.

Communication may be to individuals, between individuals, to groups or to a population.

This definition captures all components of health literacy and all components of risk communication and the different directions in which communication occurs in practice.

Description of status of COVID-19

On 30 January 2020, the WHO Director General declared that the outbreak of novel COVID-19 constituted a Public Health Emergency of International Concern. The disease is caused by Severe Acute Respiratory Syndrome coronavirus 2 (SARS-COV-2) and is transmitted through close contact with an infectious person, through touching of infected objects or surfaces, or through respiratory droplets and aerosols, with recent recognition of airborne transmission (Delikhoon 2021, Edwards 2021). COVID-19 causes severe or critical symptoms in around 20% of those infected. A recent systematic review reported the average infection fatality rate across populations to be 0.68% (95% CI: 0.53-0.82%) (Meyerowitz-Katz 2020) but with high variability and acknowledging that fatality rates are much higher amongst older people and those with existing chronic conditions(UN 2020).

As of 15th June 2021, more than 176 million confirmed cases of COVID-19 have been reported worldwide and over 3.8 million deaths (Johns Hopkins 2021). Numbers of cases and deaths continue to rise rapidly across the world, with considerable variation geographically (WHO 2020). In the absence of a vaccine or effective treatments for COVID-19, the pandemic has required populations worldwide to implement non-pharmaceutical intervention (NPI) measures to prevent transmission and to control the spread of the COVID-19 disease (Haug 2020).

Since December 2020, vaccine programs have commenced in a number of countries, with more commencing or scaling up to deliver millions of doses of vaccine during 2021(Our World in Data, 2021). As of March 2021, approximately 320 million doses of vaccine have been given across the world (WHO situation report 2021). While estimates vary it is expected that global coverage of vaccination will take several years. Until the time that coverage is adequate to confer herd immunity amongst populations globally, NPI measures will continue to be necessary. Additionally, while vaccines are rolled out globally, COVID-19 continues to circulate in populations. Changes to the virus as it circulates has and will continue to give rise to viral variants (del Rio 2021). Vaccines are of variable efficacy against severe disease, and may not be able to fully protect people against such new variants. As a result, the need for populations to adopt and maintain NPI measures will be an ongoing priority across the world. Communication to support adoption and adherence to such measures will therefore be, by extension, a priority worldwide now and for the foreseeable future.

Definition of physical distancing

Physical distancing measures comprise a suite of public health measures that are implemented to prevent and limit the transmission of a disease outbreak like COVID-19. This review uses the term 'physical distancing' in preference to 'social distancing'[1] as these measures focus on reducing physical contact or closeness (proximity) as a means of interrupting transmission, rather than reduction of social contact alone.

Physical distancing includes contact tracing, isolation, quarantine, school measures/ closures, workplace measures, including closures, and crowd avoidance, including individual distancing (see **Table 1).** These measures may be put in place singly or as different combinations of measures, to prevent and control the spread of infectious diseases (WHO 2019). Physical distancing measures are most often implemented alongside a comprehensive package of NPIs and other response measures, rather than alone. Such NPIs include personal protective measures (e.g. face masks), environmental measures (e.g. surface cleaning) and travel measures (e.g border restrictions). The measures considered relevant in this review were selected based on consultation with WHO in 2020, and by drawing on the key physical distancing strategies identified and defined by WHO in relation to pandemic influenza (WHO 2019). This review focuses on physical distancing measures occurring in community (non-healthcare) settings.

Contact tracing is included here as part of the suite of physical distancing measures, as it forms one of the key measures outlined by WHO for the control of pandemic influenza, and is also a key strategy in containing the spread of the COVID-19 virus in the community. School and workplace measures were also explicitly identified by the WHO pandemic influenza guidelines as key physical distancing measures. In consultation with WHO, there were also agreed as specific areas of focus for this review given the role of both sets of measures in the current pandemic.

For this review, such physical distancing measures (particularly contact tracing) are defined in terms of communication with and participation or engagement by individuals and groups within the population. This contrasts with the systems-levels decisions that may be in place as part of implementation of these measures. This review therefore *includes* those aspects of contact tracing that reflect engagement by individuals or groups (e.g.using contact tracing check-in, providing information to contact tracers, communicating with individuals to be tested). The review *excludes*

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[1]This has also recently been referred to as 'social and physical distancing' measures (Organization, W. H. (2020). Overview of public health and social measures in the context of COVID-19: interim guidance, 18 May 2020, World Health Organization.

those wider, system-level aspects of contact tracing that do not contain a primary communication component, such as the systems or processes that are required to be in place to enable contact tracing to occur (e.g. use of QR codes at a population level, broader population testing measures).

As well as the focus on communication with individuals and communities about physical distancing measures in this review, the definitions contained below in the table have been used to provide a broad delineation of the different physical distancing measures for COVID-19 and eligible for inclusion. However, these too have been interpreted in the context of the COVID-19 pandemic and the particular features of this virus in comparison with influenza (e.g. isolation measures may be in place for someone exposed to COVID-19 for a set period of time, regardless of whether they are symptomatic or not; quarantine is required for 14 days if there is clear evidence of exposure to a positive case, irrespective of text result).

Table 1: Physical distancing definitions (WHO 2019)[2]

Physical distancing measure	Definition
Contact tracing	The identification and follow-up of persons who may have come into contact with an infected person, usually in combination with quarantine of identified contacts.
Isolation	Reduction in virus transmission from an ill person to others by confining symptomatic individuals for a defined period either in a special facility or at home.
Quarantine	Isolation of individuals who contacted a person with proven or suspected viral illness, or travel history to an affected area, for a defined period after last exposure, with the aim of monitoring them for symptoms and ensuring the early detection of cases. Quarantined cases may be isolated.
School measures/ closures	Closure of schools either when virus transmission is observed in the school or community, or an early planned closure of schools before virus transmission initiates.
Workplace measures, including closures	Measures to reduce virus transmission in the workplace, or on the way to and from work, by decreasing frequency and length of social interactions. May include closure of workplaces when virus transmission is observed in the workplace, or an early planned closure of workplaces before virus transmission.
Crowd avoidance, including individual distancing	Measures to reduce virus transmission in crowded areas/ mass gatherings or approaches for restrictions on gatherings or individual distancing in homes, shops, workplaces, public transport and public or mass gatherings.

Communicating to promote and support physical distancing for COVID-19 prevention and control

In this context and combining definitions, communicating to promote and support physical distancing will include the following types of actions:

- Informing/educating *e.g. communication to inform people about how to get tested*

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[2]Definitions are adapted from page 3 of the Annex to (WHO (2019). 'Non-pharmaceutical public health measures for mitigating the risk and impact of epidemic and pandemic influenza.', available at https://apps.who.int/iris/bitstream/handle/10665/329439/WHO-WHE-IHM-GIP-2019.1-eng.pdf

- Reminding *e.g. messages to reinforce public health messages about the need for physical distancing measures*

- Facilitating communication or decision making *e.g. communication to help people know when to self-isolate and quarantine, and how to do so*

- Enabling communication *e.g. prompts to ask questions about physical distancing measures*

- Acquiring skills *e.g. how to recognise signs and symptoms*

- Supporting behaviour change *e.g. providing support when in quarantine or self-isolating*

- Being supported *e.g. receiving appropriate support to continue physical distancing or isolation*

- Involving the community in decision making associated with the promotion of physical distancing*e.g. engaging community leaders to help tailor messages to hard-to-reach groups.*

1.2 Description of the synthesis question

The question addressed by this review is: What are relevant, feasible and effective communication approaches to promote acceptance, uptake and adherence to physical distancing measures for COVID-19 prevention and control?

In addressing this question, we will be updating a review for the WHO European Office (Ryan 2021). The rapid review was completed at the start of June 2020, with searches for evidence current up to 1 May 2020.

Review methods

We will use rapid review methods (Garritty 2021; Tricco 2020; Wilson 2018).

The review question is complex and addressed by the synthesis of knowledge gained from different study designs, i.e. quantitative, qualitative or mixed method designs. For a question of this type and being conducted rapidly, it is recommended we search and analyse findings from guidelines and systematic reviews relevant to this question, including relevant single quantitative or qualitative studies from the COVID-19 pandemic era only if gaps emerge in findings from guidance or reviews. We will search for relevant studies from 1 May 2020.

Further detail of methods is provided in Section 3: Methods.

1.3 How the findings of this review might inform policy options

In the period of vaccine rollout globally and while waiting for herd immunity and/or effective therapies for COVID-19 to emerge, physical distancing measures are the cornerstone of an effective public health response to prevent and contain transmission. While physical distancing measures have been implemented worldwide to contain COVID-19, how to best communicate with the public to promote acceptance, uptake and adherence to these measures remains less clear. This is particularly so with the increasing complexity of such messages (e.g. those promoting adherence to physical distancing measures even when vaccinated) with variable vaccine efficacy and emergence of viral variants.

We anticipate that a large volume of COVID-19 specific research will have emerged since May 2020. We also expect that the findings of this new research will add meaningfully to the findings of the original rapid review, particularly in relation to communicating about physical distancing measures over sustained periods of time, as is required over successive waves of a pandemic outbreak.

The original version of the review, published in March 2021 (Ryan 2021) included 31 pieces of evidence (country specific or globally-focussed guidelines, systematic reviews, single studies from the COVID-19 era), with many published prior to the pandemic. A synthesis of guideline- and review-level evidence meant it was possible to identify several key messages related to the critical role for public communication and information for physical distancing, including:

- The critical role for public communication and information during a pandemic. Success was dependent upon good planning and implementation.
- The need for clear, accurate and timely public information; providing actionable messages; and updated over the whole pandemic so that people are accurately informed about risk and what they need to do to minimise risk.
- The need for practical support and access to essential services (e.g. food, medicines, financial support) alongside public information and communication, to enable people to adhere as closely as possible to physical distancing measures.
- The need for public information to convey consistent messages using understandable language, from different sources and via multiple dissemination pathways.
- That communication and information must be tailored to local contexts to assure acceptability and community reach, and to meet diverse needs. Tailoring should include explicit consideration of existing inequalities, and planning is needed to avoid exacerbation of these with enactment of physical distancing measures. Vulnerable or disadvantaged communities may require additional targeted support to take up preventive measures.
- The need for community engagement to inform tailoring of messages to groups within populations, so helping to ensure appropriateness to local contexts, and identify ways to improve the reach of public health communication.

The evidence in this rapid review update will also have direct implications for policy makers to consider when planning, implementing and revising physical distancing measures for COVID-19 over time.

Much of the evidence on which the above findings was based were drawn from the pre-COVID era (although relevant to infectious disease pandemics and epidemics e.g. SARS, MERS), and we do not expect that addition of more current evidence will radically change these key findings found in the original review. However, the context in which the COVID-19 pandemic is managed continues to change rapidly. For instance, knowledge is rapidly accumulating about the characteristics of COVID-19 as an infectious disease, the emergence and features of variants, the initiation and wide-scale implementation of vaccine programs, and the behaviours of individuals and populations undertaking risk minimisation efforts such as physical distancing.

More recent research eligible for this update is likely to include emerging new findings and so may extend and enhance our understanding of the review's original main findings in the context of a pandemic emergency unfolding over time. Such new findings, related to communication, might include those related to misinformation, trust in public agencies, hesitancy to undertake preventive measures, or changes in attitudes and behaviours over the course of the pandemic, including

changes over time. These may influence individual and community willingness and ability to accept, take up, or adhere to physical distancing measures. Incorporating any new findings that help to broaden our understanding of such factors, and how they translate into behaviours of individuals and communities will be an important contribution to the evidence in this area as countries worldwide continue to work towards control of the pandemic. Additionally, emerging research undertaken during the pandemic may help to fill gaps in the original review, for instance, providing more evidence on communication related to school and/or work measures, or on contact tracing efforts for COVID-19, where there was relatively less evidence identified.

2.Objectives of the review

This rapid review will update the rapid review undertaken to address the question: What are relevant, feasible and effective communication approaches to promote acceptance, uptake and adherence to physical distancing measures for COVID-19 prevention and control?

The primary focus of this review is therefore communication approaches to promote and support acceptance, uptake and adherence to physical distancing – and not the effects of physical distancing *per se*.

A secondary objective, introduced in this review update, is to explore and identify key elements of effective communication for physical distancing measures for different (diverse) populations and groups. This may include differential analysis of countries according to income levels (e.g. upper and middle income compared with others); or of target groups within populations (e.g. lower socioeconomic status, lower health literacy, hard to reach (e.g. migrant and refugee groups, people experiencing homelessness), culturally and ethnically diverse groups, specific age and demographic groups); and may include consideration of the prevalence of COVID-19 within populations over time (e.g. communication during peak times (surge/wave) versus that during lower prevalence periods).

3.Methods

The original version of this review, and this update, will use methods based closely on rapid response methods developed and used by McMaster University (Wilson 2018), with methodological decisions informed by Cochrane rapid review methods guidance (Garritty 2021; Tricco 2020). The McMaster methods have been developed to enable rapid syntheses of evidence, using transparent methods, within specific time frames and using available synthesised forms of evidence (e.g. systematic reviews) supplemented with primary research, as appropriate (e.g. Lavis 2018). We adapted these methods somewhat as capacity allowed (e.g. dual (rather than single) screening of studies; quality assessment of primary studies as well as included reviews and guidelines).

This update will use the same approach as the original version of the review and all of the methods will be clearly reported in the final review update. These methods are broadly in line with Cochrane RRMG guidance (Garritty 2021; Tricco 2020). Where there are differences, these primarily reflect the need to descriptively synthesise results, and that analysis will be based on thematic synthesis of quantitative and qualitative data together, and from both primary and secondary research. This means that the review will not be able to assess quality of evidence using a rating structure such as GRADE to produce a formalised hierarchy of evidence that might typically be reported in a Cochrane review.

3.1 Criteria for considering studies for this review

Study and source eligibility	
Study design	☒Guidelines (country specific, global, regional) ☒Systematic Reviews (intervention reviews, qualitative syntheses, mixed-methods reviews) ☒Single studies from the COVID-19 era if there are gaps in the evidence from guidelines or reviews (i.e. primary studies that provide new knowledge not available from guidelines or reviews). Single studies could include any of the following: observational studies (e.g. population surveys, cohort studies, interrupted time series), Randomized Controlled Trials (RCTs), qualitative studies (any empirical qualitative method), mixed-methods research.
	Reason for inclusion of non-RCTs The question requires consideration of findings from multiple study designs which have been synthesized in guidelines or systematic reviews. Based on our familiarity with the literature, we anticipate that most of the new guidelines and reviews we will find will include a mix of study designs, in additional to consensus opinion (in the case of guidelines). In the main, studies included in guidelines or reviews on this topic are surveys, population studies (e.g. cross-sectional research) and qualitative research studies. It is not common - although possible - that guidelines or reviews include RCTs, mainly because behavioural responses in the context of an epidemic or pandemic do not lend themselves to this study design. The synthesis presented in the original review was not intended as a hierarchy of evidence as this was not epistemologically meaningful or methodologically sound. **Included (population and context)** Papers with a focus on physical distancing measures for prevention and/or control of COVID-19 or other similar infectious diseases (including SARS, MERS, influenza, Ebola and TB) will be included. The review focuses on communication to promote physical distancing measures in settings outside health care settings, i.e. measures put in place in community settings. Research from all countries will be eligible for inclusion, irrespective of income level or geographic location. **Included (approaches)** Papers with evidence on communication with individuals, organisations, communities and/or systems. Communication in the context of physical distancing will be defined as that undertaken with any one or more of the following purposes (Hill 2011; Kaufman 2017; Ryan 2016): • Information/education • Reminding • Facilitating communication or decision making • Enabling communication

	• Acquiring skills • Supporting behaviour change • Being supported • Involving the community in decision making associated with the promotion of physical distancing. **Excluded** • Strategies focussed on methods of enhancing community ownership of NPI measures. • Strategies that primarily focus on (personal) support, such as psychosocial support for individuals, as these fall outside the scope of the review. • Strategies aiming primarily to minimise risks or harms to individuals or to communities, without a focus on communication of physical distancing measures, for example, informing individuals about the importance of 'flu vaccination in the context of COVID-19 pandemic. • Quality improvement strategies primarily focussing on the implementation and/or effects of physical distancing measures, without including an identifiable communication element (from above), for example those assessing the effectiveness of physical distancing measures themselves. • Studies which model various effectiveness scenarios. • Papers on mobile/digital health applications without an explicit focus on physical distancing measures and communication to achieve these measures. • Assessments of knowledge of pandemic risks and/or perceptions of risks without a focus on physical distancing measures. • Public/consumer information materials on physical distancing.

3.2 Search methods for identification of studies

Search methods			
Expertise	The searches for the original rapid review will be reviewed by a content expert (Information Specialist Anne Parkhill). See Table 1, in Appendix 7.1 for search strategies Strategies will also be reviewed to ensure that emerging evidence (e.g. related to emergence of COVID-19 variants) will be identified by the searches. There will be no search restrictions for dates and language of papers.		

Electronic databases	Database
	☒MEDLINE
	☒CENTRAL
	☒EMBASE
	   Other (please specify, e.g. PsycINFO)
	Cochrane Library
	
	Covid research registers e.g.
	   covid-19.cochrane.org
	☒ Clinical Trial Registry (please specify)
		From:
		
		Inception
			To:
			Present

<table>
<tr><td></td><td>Epistemonikos COVID 19
https://app.iloveevidence.com/loves/5e6fdb9669c00e4ac072701d
WHO Global research on COVID 19
https://www.who.int/emergencies/diseases/novel-coronavirus-2019/global-research-on-novel-coronavirus-2019-ncov
Lit COVID
https://www.ncbi.nlm.nih.gov/research/coronavirus/
CAMARADES COVID-19 SOLES
https://camarades.shinyapps.io/COVID-19-SOLES/

Preprint sites e.g.
☒MedRixv
☐SSRN
☐Authorea
☐Research square
☐BioRxiv

Other sources
Google Scholar</td><td></td><td></td></tr>
<tr><td>Other searches</td><td>☒ Systematic review references
☒Reference lists of included studies
☒ Grey literature (specified in Electronic databases listing)
☒ Citation tracking
☐ Data from the pharmaceutical industry
☐Data from Governments/ intergovernmental agencies (Please specify)
☒ Contact experts for references
☐Other (please specify)</td><td colspan="2">Reference lists of key studies will be searched together with searches for citing articles of key papers.
Key informants will also be consulted for additional sources of relevant evidence. Google Scholar and other grey literature sites will be searched, as judged as appropriate through testing and assessment of database search outputs.</td></tr>
<tr><td>Approach to ongoing and unpublished studies</td><td>☐Include ongoing studies
☒Unpublished studies
☒ Studies in press
☐Exclude all studies that are ongoing, unpublished, or in press</td><td colspan="2">Studies that are available but not yet peer reviewed (e.g. MedRivx) will be included but lack of peer review will be</td></tr>
</table>

		noted in the quality assessment. For pre-prints included in the original version of the review, we will check the status of publication and verify the data extracted against any subsequent peer-reviewed papers arising from the pre-print. These steps and any decisions made related to the findings of such studies will be transparently reported in the review.

Methods for screening search results			
Expertise	Screening will be performed by one of the original review authors, with at least 20% of citations screened by a second reviewer. Rebecca Ryan and other co-authors will develop the decision screening tools and provide feedback/ training, as necessary. Screening will be performed in Endnote (See Table 2 in Appendices 7.2 Selection of evidence). Selection of studies will be reported in a PRISMA flow diagram.		
Screening methods		*Abstract*	*Full text*
	Dual; second reviewer checks all excluded records	☐	☒
	Dual; second reviewer checks at least 20%of excluded records	☒	☐
	Dual; independent screen and cross check	☐	☐
	Clear decision rules to operationalise the selection criteria will be developed, and refined iteratively (e.g. to make operational concepts such as acceptance/ adherence/ uptake). When applying the WHO definitions of physical distancing measures for the purposes of selecting studies, and data extraction from included studies, we will consider relevant features of the measures and how to consistently identify those most relevant for this update. This might include clarifying a number of issues, depending on what might arise in the identified research. For instance, this might include consideration of:		

	• The definition of school measures/closures – which may include higher education, vocational training and health placement settings, as well as nurseries (early childhood educational settings). • Workplaces, including the move to work from home for large proportions of the workforce. • Further detailed consideration of the type of workplace and whether or to what extent physical distancing measures are possible in certain types of work may also be needed (eg childcare, aged care). • Crowd avoidance – with public health measures changing across countries in response to waves of the pandemic (closures and re-opening) this may also include crowd avoidance in hospitality, retail (non-essential), tourism and travel settings. • The broader structural context, such as laws mandating physical distancing measures, prosecution or fines for failure to adhere to measures, will also be considered, if applicable, as this reflects the wider context within which communication about physical distancing is occurring. In all cases, decisions will be developed by at least two review authors working collaboratively to refine decisions rules and to reach consensus, with consultation with the wider author team as required.		
Discrepancy resolution	☒Consensus and/or third reviewer ☐Other (please specify)		
Excluded studies	All decisions taken during screening will be documented and reported as a list of excluded studies (with reasons for exclusion).		
Inclusion of abstracts and conference proceedings	☐ Exclude all ☒Include if clearly eligible and have usable data ☐Include if clearly eligible regardless of usable data ☒ Include if eligibility is unclear and add to section in report		
Inclusion of non-English language studies	☒Include abstracts and full texts *[any language]* ☒ Include full texts only *[any language]* ☐ Exclude		
	☒All potentially relevant abstracts will progress to full text screen ☐ Single title/abstract screen by foreign-language speaker(s) ☒Abstract and methods will be translated for abstract/full text screen [but note this will be contingent on us identifying translators; where we are unable to do so within a reasonable timeframe we will list any studies outstanding for translation and assessment in the review. We may also explore the use of automatic/ software-based translation tools, if required] ☐ Listed as non-English language and not assessed further		

3.2   Data collection and analysis

Data extraction	
Expertise	Data extraction will be performed by one of the original review authors. The data extraction template for the original review will be reviewed by Rebecca Ryan and Sophie Hill, with input from co-authors as appropriate.
Software	Data will be extracted from included evidence sources, using a standardised template that was developed, piloted and used for data extraction in the original review (Microsoft Word template). RevMan (web version) will be used to collate and report all elements of the review, using a rapid review (flexible review) format. If quantitative pooling is feasible, R and/or Stata will be used for meta-analysis.
Data to be extracted	Data extraction will focus on information related to key elements, including: Source, Country and Types of research and Types of included studies, Population, Intervention or Phenomenon of interest, Major results. Study design: Various study designs Setting: Community settings Participant characteristics: Major features of the population of interest, including those to enable systematic comparisons across specific population groups of interest (e.g. those based on country income level, SES, health literacy, demographic features, vulnerable/ hard-to-reach status (e.g. refugees), cultural or ethnic background or other key features identified during the conduct of the review). Intervention or Phenomenon of interest: Communication interventions or issues Comparator characteristics: if relevant. Outcomes assessed: Qualitative and quantitative data relating to the major outcomes of acceptance, adherence, uptake/ usage; barriers or promoters; or other relevant outcomes as judged by the review authors (and following the decisions made in the original version of the review). Analysis: Framework analysis (Ritchie 1994); informed by Tricco (2017). More details are provided in text below (Synthesis of findings).
Data extraction methods	☐Single, no second reviewer ☐Dual; second reviewer checks all data. Any disagreements were resolved by discussion to reach consensus. ☒Dual; second reviewer checks at least 20% of data, particularly outcome data ☐Dual; independent screen and cross check See Appendices Section 7.3 for data extraction template.

Methodological quality assessment tool	☐ Cochrane RCT risk of bias tool ☐ ROBINS-I tool for non-randomised studies ☐ Adapted-hybrid of the RCT-ROBINS-I tools (NB please provide justification for hybrid use) ☐EPOC Risk of Bias tools ☒Another tool Following the original review version, included papers will be appraised for quality, using established tools appropriate to methodological design: • Guidelines: AGREE II(Brouwers 2010) • Systematic reviews: AMSTAR (original tool) for systematic reviews(Shea 2007) • Survey/ cross-sectional: Adapted from approach by Bults 2015 • Qualitative studies: CASP tool for qualitative studies(CASP 2018a) • RCTs: CASP tool for RCTs(CASP 2018b). If several RCTs are included in this update, we may alternatively adopt the Cochrane RoB tool for quality assessment (and retrospectively re-assess any RCTs included in the original version of the review).	
Method of methodological quality assessment	☐Single, no second reviewer ☒Dual; second reviewer checks all judgements ☐Dual; second reviewer checks [add proportion] ☐Dual; independent screen and cross check	☒results going into the SoF tables with descriptive thematic findings and a general summary statement of the quality of the included studies ☐other (please specify)
Discrepancy resolution	☒ Consensus and/or third reviewer ☐Other (please specify)	
Contacting study authors	☒Authors will be contacted for missing information and data [these efforts will be concentrated on primary research studies, particularly to determine (for pre-print papers) where the paper is in the peer review process (in peer review or in press post peer review); we may also request further data although this may not be forthcoming, given the timelines for publication] ☐Authors will be contacted for missing outcome data only ☐Authors will not be contacted	
Data management		
Software	N/A	
Resolving conflicts between sources	If there is a conflict between data reported across multiple sources for a single study (e.g. between a published article and a trial registry record), we will attempt to contact trial authors for clarification. This is unlikely to occur for evidence on communication.	

3.3 Synthesis

Data synthesis	
Measures of treatment effect	☐Continuous outcome: mean difference and 95% confidence intervals (CIs) ☐ Continuous outcome: standardised mean difference ☐ Dichotomous outcome: risk ratio /relative risk (RR) and 95% CIs ☐ Dichotomous outcome: odds ratio (OR) and 95% CIs ☐ Dichotomous outcome: risk difference (absolute risk reduction) ☐Peto odds ratio method ☒ Other (please specify) Thematic analysis (based on the principles of framework thematic analysis (Ritchie 1994), but incorporating qualitative and quantitative data, and evidence at different levels (synthesised and non-synthesised (primary) research). See text below for more details.
Decision rules for extraction of quantitative data	Please list your decision rules regarding data extraction for situations where data are: • reported at multiple time points • multiple "doses" • multiple exposures are compared (e.g. ever exposed, frequency of exposure For example list them from the most favoured for you to extract – to the least. N/A
Data standardisation	Data will be standardised by identifying major thematic categories in the data. Data will be extracted and findings mapped to each component of the review question (e.g. acceptance, adherence) and there will be a second translational step to identify the promotion or communication purpose and how this might affect interpretation of the study findings. See text that follows table for more details of the methods to be used.
	Upon drafting the findings of the review, we will seek expert review to ensure scientific rigour and systems relevance. Feedback will be incorporated into the final version of the review.
Unit of analysis issues	N/A
Synthesis of findings	Data will be systematically extracted and tabulated in the first instance, in order to transparently present the key features and findings of the included evidence in a structured way. The analysis of the original review identified six themes and we envisage this will provide the structure for considering the updated evidence. The themes are:

1. Public communication: features of communication (content, timing and duration, and delivery)

2. Public communication: recipients of communication (audience and setting, and equity issues)

3. Supporting changes to behaviour at population and individual levels (including changing attitudes or intentions related to behaviour change)

4. Engaging the community and its members in developing and delivering communication

5. Public trust and perceptions

6. Communication and support considerations specific to distancing measures in schools and workplaces.

The process used initially was a modified framework analysis (Ritchie 1994), informed by methods described in Tricco 2017 (primarily Chapter 4). Findings from both qualitative and quantitative research are analysed concurrently. We will repeat these methods but allow for new categories to emerge through the framework analysis.

In the original version of the review, we had intended to separately analyse quantitative (focusing on effectiveness) and qualitative research (focused on identifying views, experiences, and the context in which physical distancing measures might be implemented, including feasibility issues). However, the nature of the included research meant that in practice this separation was not sensible: many of the included synthesised evidence sources were based themselves on a range of study designs (e.g. surveys, population studies and qualitative research). That the research question and context are focused on behavioural responses to the pandemic means that the approach to data synthesis must be more flexible than might be typical in a standard review of effectiveness questions.

Therefore, the communication intervention taxonomy (Hill 2011, Kaufman 2017) will be used in the first instance as a basis for thematically organising the findings and identifying common purposes among the included evidence. Within these major thematic categories, papers will be systematically grouped according to shared communication features, including aspects of the intervention delivery and/or design, intended target population features, barriers and/or enablers identified, and if relevant, aspects of the physical distancing measure under consideration. Contextual factors or implementation considerations will also be considered explicitly.

We will also perform a second translational step as part of this analysis, identifying the communication or behavioural promotion purpose(s) in the data, and how this might affect the interpretation of the study's findings.

In the analysis, we will consider population features, intervention characteristics (i.e. characteristics of the communication interventions), as well as contextual factors or implementation issues. In the synthesis, we will

first present the results arising from research which most directly addressed the review question. This will be followed by a summary of contextual factors or implementation considerations, informed by a separate set of papers more indirectly linked to the review question.

The quality of papers informing each section of the findings will also be presented, although the synthesis will not represent a strict hierarchy of evidence as this will not be possible nor meaningful. With the accumulation of evidence in this update, we will explore ways to clearly describe the results of quality assessments and to ensure these are systematically presented alongside the main findings of the review. We will also identify and discuss any limitations of the assembled evidence, and any potential biases in the review process itself.

We also aim in this update to investigate and identify key elements of effective communication for physical distancing measures for different (diverse) populations and groups. This may include differential analysis of the following population groups, as is possible from the included studies:
- countries according to income levels (e.g. upper and middle income compared with others
- target groups within populations, such as:
  - lower versus higher socioeconomic status groups,
  - lower versus higher health literacy groups, including general educational levels if appropriate,
  - hard to reach groups versus general population,
  - culturally, linguistically and ethnically diverse groups versus general population,
  - specific demographic groups, as indicated by the data (e.g. younger versus older populations).
- populations defined by prevalence of COVID-19 over time (e.g. communication during peak times (surge/wave) versus that during lower prevalence periods).

Where possible we will identify communication approaches targeting individual members of the public and report these separately from community-level (public health) communication. In the original review, much of the evidence was directed at the population level and focused on public pandemic risk messaging, including information to the general public, or to specific groups within populations, to promote physical distancing measures.

At each stage of synthesis (identifying major thematic categories and subcategories of data, analysing the findings, considering other factors such as intervention and population features), we will develop clear decision rules to ensure consistency of decision making across members of the team. Training and support will be provided by members of the original review author team where needed. A single reviewer (one of the original review authors), with work checked by a second reviewer, will undertake each of the synthesis steps. At least one senior member of the original author team will be involved in oversight or conduct of the review at all stages of synthesis, for all data, to ensure consistency and accuracy of the data and analyses.

	If appropriate, we may also seek to identify potential quantitative outcomes that might be pooled in subsequent analyses (review updates). The different levels of outcomes reported (population, individual, social group) mean that such outcomes are likely to be non-comparable in many instances and so not eligible for statistical pooling, but we will explore this as a possibility, if relevant.

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6 Declarations of Interest

RR: None known

AParkhill: None known

LS: None known

BM: BM's institute has received funding from the Victorian Government for COVID-19 related research, but that is unrelated to this research

JK: None known

SHill: SH's institute has received funding from the Victorian Government for COVID-19 related research, but that is unrelated to this research.

CdeM: None known

CS: None known

SHurley: None known

GLDT: None known

MH: MH's institute has received funding from the Victorian Government for COVID-19 related research, but that is unrelated to this research.

APedrana: AP's institute has received funding from the Victorian Government for COVID-19 related research, but that is unrelated to this work.

FS: FS's institute has received funding from the Victorian Government for COVID-19 related research, but that is unrelated to this research.

AE: None known

AC: None known

RC: None known

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8 Appendices

8.1 Search strategies

Table 1 Medline search strategies

Intervention terms strategy

1. "Health Knowledge, Attitudes, Practice"/ (118867)
2. health education/ (62054)
3. consumer health information/ (4092)
4. Reminder Systems/ (3652)
5. patient education as topic/ (87144)
6. exp information literacy/ (7280)
7. exp Communication/ (328208)
8. exp Decision Making/ (213664)
9. competitive behavior/ (8328)
10. cooperative behavior/ (44859)
11. mass behavior/ (650)
12. social skills/ (2245)
13. exp social support/ (74996)
14. Pamphlets/ (4002)
15. Communications Media/ (1677)
16. "Treatment Adherence and Compliance"/ (762)
17. Health Promotion/ (77096)
18. Leadership/ (43316)
19. ((health or medical or clinical or advice or patient*) adj3 (remind* or educat* or inform* or belie*)).ti,ab,kw. (351252)
20. ((patient* or communit* or population or mass) adj3 (literatur* or material* or information* or guide or guides or instruction*)).ti,ab,kw. (105842)
21. ((print* or written or text* or social) adj3 (material* or information* or guide or guides or instruction* or advice or advis* or messag* or note or notes or media)).ti,ab,kw. (46372)
22. ((handout* or guidebook* or information) adj3 (card or cards or postcard*)).ti,ab,kw. (385)
23. (information adj2 (pack* or sheet*)).ti,ab,kw. (1900)
24. (mhealth or M#health).ti,ab,kw. (6417)
25. (communit* adj3 leader*).ti,ab,kw. (3734)
26. (self-monitor* or self monitor* or self protect* or self-protect*).ti,ab,kw. (11044)

27. or/1-26 (1289257)

Disease terms strategy

28. exp Coronaviridae/ (88105)
29. Coronavirus Infections/ (45010)
30. Hemorrhagic Fever, Ebola/ (5962)
31. Tuberculosis/ (107647)
32. Disease Outbreaks/ (84727)
33. epidemics/ or pandemics/ (74133)
34. Influenza, Human/ (52479)

35   (nCoV or 2019-nCoV or ((new or novel or wuhan) adj3 coronavirus) or covid19 or covid-19 or SARS-CoV-2 or "Severe Acute Respiratory Syndrome Coronavirus 2").mp. (162116)

36   (coronavirus* or coronovirus* or coronoravirus* or coronaravirus* or corono-virus* or corona-virus*).ti,ab,kf. (74848)

37   (pneumonia or respiratory-illness* or respiratory-symptom* or respiratory disease*).ti,ab,kf. (185246)

38   (ebola or tuberculosis or pneumonia or SARS or MERS).ti,ab,kf. (422603)

39   or/28-38 (716415)

40   COVID-19/ (95613)

41   SARS-CoV-2/ (74345)

42   exp Coronavirus/ (86916)

43   exp Coronavirus Infections/ (106202)

44   (covid or coronavir* or coronovir*).mp. (175816)

45   ((corona* or corono*) adj1 (virus* or viral* or virinae*)).ti,ab,kf. (2684)

46   (ncov or n-cov or 2019nCoV or nCoV2019 or CO?VID-19 or CO?VID19 or WN-CoV or WNCoV or HCoV-19 or HCoV19 or 2019nov-el* or SARS-CoV-2 or SARSCoV-2 or SARSCoV2 or SARS-CoV2 or SARSCov19 or SARS-Cov19 or SARSCov-19 or SARS-Cov-19 or Ncovor or Ncorona* or Ncorono* or NcovWuhan* or Ncov-Hubei* or NcovChina* or NcovChinese* or SARS2 or SARS-2 or SARScoron?virus2 or SARS-coron?virus-2 or SARScoron?virus2 or SARScoron?virus2).ti,ab,kf. (153731)

47   or/40-46 (183784)

48   27 and 47 (13811)

Public Health Measure. Contact tracing

49   Contact Tracing/ (5411)

50   ((trace or identif*) adj2 contact*).ti,ab,kw. (2347)

51   ((case* or early) adj2 (detect or detecting or detection or find*)).ti,ab,kw. (107447)

52   ((mobile or tracing or contact) adj2 (app or apps)).ti,ab,kw. (4117)

53   or/49-52 (118497)

Public Health Measure. Isolation

54   Patient Isolation/ (4348)

55   Social Isolation/ (14867)

56   (self-isolat* or solitary or solitude).ti,ab,kw. (49861)

57   ((patient* or case* or voluntar* or home or social* or self) adj2 (isolat* or confine* or confinement*)).ti,ab,kw. (56755)

58   or/54-57 (120339)

Public Health Measure. Quarantine

59   Quarantine/ (5003)

60   quarantin*.ti,ab,kw. (9038)

61   or/59-60 (11915)

Public Health Measure. School measure/closures

62   (school* adj2 (closure* or closing or holiday*)).ti,ab,kw. (1143)
63   (college* adj2 (closure* or closing or holiday*)).ti,ab,kw. (5)
64   ((class or classes) adj2 dismiss*).ti,ab,kw. (10)

65   or/62-64 (1157)

Public Health Measure. Workplace measures/closures

66   exp Work/ (66616)
67   Workplace/ (25292)
68   (work site* or workplace* or business* or organisaton* or job site* or organization* or office*).ti,ab,kw. (566555)
69   or/66-68 (633468)
70   (shutdown* or closure* or close* or closing or cease or cessation* or leave).ti,ab,kw. (1077376)
71   and/69-70 (33742)

72   71 or telework.ti,ab,kw. (33848)

Public Health Measure. Crowd avoidance, individual physical distancing measures

73   social behavior/ (54951)
74   (social* adj2 (mixing or distanc*)).ti,ab,kw. (6869)
75   (community adj2 mitigat*).ti,ab,kw. (169)
76   (gather* or crowd* or event* or meeting* or sport* or concert* or pilgrimage* or park or parks or conference* or mosque* or temple* or party or parties or wedding* or funeral* or mass or community or communities or church*).ti,ab,kw. (2953615)
77   or/73-76 (3006276)
78   (distanc* or space or spacing or avoid* or remote or retreat).ti,ab,kw. (1102941)
79   and/77-78 (156694)
80   Physical Distancing/ (1476)
81   (lockdown* or lock down* or confine*).ti,ab,kw. (112243)
82   ((stay or remain) adj2 home).ti,ab,kw. (2502)
83   ((physical or social*) adj2 distanc*).ti,ab,kw. (9035)
84   non pharmaceutical intervention*.ti,ab,kw. (715)
85   non?pharmaceutical intervention*.ti,ab,kw. (459)
86   NPI*.ti,ab,kw. (3952)
87   (public health adj2 (measure* or restriction* or order*)).ti,ab,kw. (4281)
88   or/80-87 (126662)

89   or/53,58,61,65,72,79,88 (544869)

90   and/48,89 (3478)

8.2   Selection of evidence

The following databases and sources will be searched:

1. Medical literature databases for the named 6 Public Health Measures[3] and also background and general references (Cochrane CENTRAL, Medline (OVID), Embase (OVID)).

2. Epistemonikos COVID 19 ,WHO Global research on COVID 19, Lit COVID, CAMARADES COVID-19 SOLES
3. MedRixv preprint site
4. Google scholar

Reference lists of key studies will be searched together with searches for citing articles of key papers. Key informants will also be consulted for additional sources of relevant evidence.

In the original version of the review conducted for WHO, we searched for evidence weekly in the month of April 2020. We may explore a similar mechanism of 'living' searches throughout this update or a search update at the end of the Review process, but will make this decision based on our assessment of how quickly new, relevant evidence is emerging.

Table 2 describes the sequence of search and selection activities for this review update.

Activities will be undertaken sequentially to identify relevant synthesised evidence (guidelines and systematic reviews) in the first instance, and then to fill gaps in the evidence from the preceding research (i.e. areas not covered by included systematic reviews and guidelines), by considering highly relevant single (primary) studies, as required.

Identified evidence will be mapped systematically against the review questions (elements of physical distancing, i.e. contact tracing, quarantine, isolation etc) by a single reviewer, with a second reviewer checking a sample of the evidence. Evidence gaps will be identified and used to inform subsequent stages of search activities. In this way, a progressive map of evidence addressing the review questions will be developed.

We anticipate that because a high volume of COVID-related research has emerged over the 2020-21 period, we may need to develop further decision rules to support our selection of primary research studies. While the great majority of the research available will not have a communication focus, it may be necessary to further screen the identified eligible research in order to maintain the review's focus. We will explore this as the review progresses, and should it be needed will consult with the author team to ensure consensus is reached and that any further methodological steps introduced are reported clearly as a deviation from the protocol in the final review.

Table 2 Sequence of review search activities

1	2	3
Search for and select (1) guidelines, (2) systematic reviews, and (3) single studies on COVID-19 Search sources to include sources 1-4 (above) concurrently	Map against questions by extracting brief data on: • Reference/source • Country of included study • Population • Intervention	Identify key gaps

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[3]The Public Health Measures referred to here relate to the six different measures subsumed under 'Physical Distancing' category: contact tracing, isolation, quarantine, school measures/closures, workplace measures/closures, crowd avoidance.

Include any guideline or systematic reviews that • Addresses physical distancing • Includes primary COVID-19 era research of intervention/experience/views/case report related to communication purposes above	• Phenomenon of interest	
4	**5**	**6**
Search for guidelines and systematic reviews (no single studies) related to other infectious diseases (including SARS, MERS, influenza, Ebola, TB and potentially, hypothetical pandemic diseases) Search sources to include sources 1-4 (above) concurrently Include any guideline or systematic reviews that: • Address physical distancing • Include primary research of intervention/experience/views related to communication purposes above	Map against questions by extracting data on: • Reference/ source • Country of included study • Population • Intervention • Phenomenon of interest	Identify key gaps
7	**8**	**9**
Contact experts to check data sources and for advice on gaps	Review search yield of single primary research studies (COVID-specific) and select those which fill gaps in the guideline or review evidence	Consider any further searches identified from expert consultation to fill outstanding gaps by searching for single studies

8.3   Data extraction form

Public Health Measure	Study features	Outcomes and findings	Translational steps
Study type			
Citation Public health measure Mapping to (major outcome categories)	Overview and aim: Type of study and data: Included disease(s): Inclusion and exclusion criteria:	Reported on: [major results] Recommendations: [reported by study]	Communication purpose: Related to review questions:

Public Health Measure	Study features	Outcomes and findings	Translational steps
	Participant features and numbers, sampling details: Countries included: Quality assessment (with details of assessment):		