....

Social distancing measures: barriers to their implementation and how they can be overcome – a systematic review

Mahan Sadjadi ⓘ , Katharina S. Mörschel, Mark Petticrew

Faculty of Public Health and Policy, London School of Hygiene and Tropical Medicine, London, UK

Correspondence: M. Sadjadi, London School of Hygiene and Tropical Medicine, Keppel Street, London WC1E 7HT, UK, e-mail: mahansadjadi@mailbox.org

Background: Despite their central role in the global response to the COVID-19 pandemic and previous infectious disease outbreaks, factors influencing the acceptability and implementation of social distancing measures are poorly understood. This systematic review aims to identify such factors drawing on qualitative literature. **Methods:** A systematic search was carried out in eleven databases. Papers were included in the review if they reported on qualitative studies of factors influencing the implementation of social distancing measures in potentially epidemic infectious diseases. An adapted meta-ethnographical approach was used for synthesis. Review findings were assessed for strength and reliability using GRADE-CERQual. **Results:** Twenty-nine papers were included from the systematic search that yielded 5620 results, and supplementary methods. The review identifies two broad categories of barriers to social distancing measures: individual- or community-level psychosocial phenomena, and shortcomings in governmental action or communication. Based on this, 25 themes are identified that can be addressed to improve the implementation of social distancing. **Conclusion:** Among other findings, the review identifies the need for good communication as well as the need for authorities to provide comprehensive support as two key opportunities to increase acceptability and adherence. Further important enablers of adherence are adequate preparedness and appropriate legislation, the presence of community involvement, solidarity within communities and trust in governments and authorities.

....

Introduction

On 31 December 2019, the WHO was informed of an outbreak of pneumonia of unknown aetiology in the city of Wuhan, China. This was the starting point of a pandemic affecting millions of people. In the following weeks and months, as SARS-CoV-2 started to spread to an increasing number of countries, social distancing was rapidly established as a central part of containment efforts.

Social distancing measures can be conceptualized as a group of non-pharmaceutical interventions aimed at minimizing contact between individuals.[1]

These types of measures can be mandated by governments, like the closure of schools and the imposition of travel bans and lockdowns, or they can result from individual choice, like reducing the number of contacts, staying at home, and other behavioural changes.

Social distancing measures are not new. They have been employed and researched previously, specifically during epidemics of diseases like SARS, MERS or pandemic forms of influenza.[1–3] Modelling and observational studies suggest the important effect such measures can have and until effective therapies or equitably distributed vaccines are available to everyone, decisive preventive action is necessary to save lives.[4–6]

In spite of some research around social distancing measures in the context of non-pharmaceutical interventions in general,[2] it remains unclear what factors enable or prevent their implementation, and what determines their feasibility and acceptability in the eyes of the public that is expected to carry them out. This is a critical question because many of these measures depend on the participation of the whole population. Having a stronger understanding of what factors prevent or promote the implementation of and adherence to social distancing measures is crucial for designing an effective and ethical pandemic response both now and in the future.

To be able to provide guidance for policymaking and future research, this systematic qualitative review sets out to synthesize the evidence relating to factors that affect the implementation of social distancing measures.

Methods

A rapid systematic review of qualitative research on social distancing was conducted. A protocol was outlined internally before the start of the review process. In order to ensure reflexivity in the conduct of this review, the lead reviewers considered, at the outset and throughout the review process, how their views and opinions were likely shaped by their first-hand experiences of social distancing implementation in Germany and the UK.

Inclusion criteria

Studies were included in this review if they:

i. reported on qualitative studies with primary data generation
ii. addressed infectious diseases with human-to-human transmission and epidemic potential (Influenza, MERS, SARS, Ebola), and
iii. included information on feasibility, acceptability, barriers, facilitators and attitudes regarding the implementation of social distancing measures.

Search strategy

Despite the central role social distancing plays in the pandemic response, neither researchers nor policymakers or the media use consistent definitions. In order to build a search strategy that is sensitive to all measures that fall within the broad concept of social distancing, a primary, defining search was performed in MEDLINE,

EMBASE, PsycINFO, Global Health, CINAHL and Cochrane Library databases for the search term 'Social Distancing'. Additionally, websites and documents of the WHO, CDC, ECDC, China CDC and Africa CDC were searched for definitions of social distancing. Searches were carried out on 13 March 2020.

The identified concepts for measures were policy-level interventions like mandated closure of schools, child-care facilities, restaurants and public venues, the cancellation of public events, bans on public transportation as well as isolation and quarantine on the one hand and individual-level behavioural responses, like workplace non-attendance, contact number reduction, staying home, avoiding crowds, avoiding transportation and reducing travel on the other hand.

Based on the results of this primary investigation, a second search was performed that included all aspects of social distancing that were found through the first search. The general strategy was to combine terms related to social distancing with terms on mass gatherings, and to then combine those with terms around epidemics. The full search strategy can be found in Supplementary Appendix 1. This final search was carried out between 17 and 19 March 2020 in MEDLINE, EMBASE, PsycINFO, Global Health, CINAHL, SCI-EXPANDED, SSCI, A&HCI, CPI-S, CPI-SSH and ESCI. The most recent version of each database was used, and no time restrictions were applied.

Study selection

All the records retrieved were imported into Zotero 5.0 (https://www.zotero.org/download/) from which duplicates were removed and titles and abstracts were screened against the inclusion criteria. The selection of studies was discussed among the authors, and consensus was reached.

Data extraction

Data were extracted regarding the following aspects: setting, sample size and composition, data collection methods, study aims as well as the first-order (participant quotes) and second-order themes (analysis and interpretation by study authors). This was done using a standardized form which was also used to synthesize third-order meta-synthesis themes and to track quality assessment.

Quality assessment

The quality of all included studies was assessed using the Critical Appraisal Skills Programme (CASP) assessment tool for qualitative studies.[7] The authors conducted their critical appraisal independently and discussed their assessments to reach a consensus.

Analytic strategy and synthesis

The review uses meta-ethnographical approaches adapted from Britten et al.[8]

Each paper was studied in-depth and themes that relate to the research question were identified inductively from the data. Line-by-line coding was done for relevant segments of reports. Participant statements quoted in research reports were treated as first-order themes, and the analysis and interpretation by researchers were treated as second-order themes. The third-order meta-synthetical themes were formed inductively based on these previously identified themes following initial *in vivo* and subsequent axial coding. Differences between reviewers' assessments were discussed until consensus was reached. The third-order themes were treated as the review's findings. Confidence in each finding was assessed using the GRADE-CERQual approach, which considers methodological limitations, relevance, coherence and adequacy of data.[9] The quality assessment previously performed using CASP contributed to the weighing of study findings by informing the appraisal of the GRADE-CERQual 'methodological limitations' category.

Moreover, where themes were corroborated by multiple studies of which at least one was high-quality (defined as having no significant concerns regarding study design, recruitment, data collection and analysis, i.e. rated with 'Yes'), overall minor quality concerns were reduced, and a high confidence rating was attributed for that finding.

M.S. analysed all included studies and K.M. double-coded a third of the included studies. The authors reached a consensus regarding identified themes and review findings

Reporting

This review follows PRISMA[10] and ENTREQ[11] statement guidelines.

Results

Description of search results and included studies

The final search (see figure 1) yielded 5620 results. After deduplication, 4019 titles and abstracts were screened. One hundred and forty-seven papers which could not be excluded based on title and abstract remained for full-text screening of which 28 papers were included. One additional paper was identified by searching references of studies.

Of the included studies, 8 included data from African countries (3 from Sierra Leone, 3 from Liberia, 1 from Ghana, and 1 from Senegal), 10 included data from North America (6 from Canada and 4 from the USA), 5 were conducted in Australia, 2 were conducted in the UK and one further study included data from the UK and Australia combined. Most papers (22/29) addressed general issues around social distancing or dealt with multiple explicit measures, among which quarantine was the most dominant one, 3/29 papers exclusively addressed quarantine and 4/29 papers focused on school closures or school-based social distancing while also addressing general concerns. A total of 2199 participants were interviewed or participated in focus group discussions (FGDs), with one study not explicitly reporting the number of participants. Table 1 shows a full list of included studies with information on key characteristics. With regards to study quality, we found that generally, few papers report the reasoning behind data collection and analytical methods used. Only 3 out of 29 reports included indications of reflexivity. In spite of flaws in reporting, all studies provided valuable insights and appeared to have been conducted appropriately. None of the studies that met the inclusion criteria were excluded based on poor quality. Instead, quality issues were considered when evaluating confidence in review findings using GRADE-CERQual.

Barriers to the implementation of social distancing measures

Barriers and facilitators identified in the included studies can broadly be categorized into two main types: individual- or community-level psychosocial phenomena, and shortcomings in governmental action or communication. A full list of concepts with examples of first- and second-order themes is provided in supplementary table 1.

Psychological, psychosocial and sociological influences

The first category of barriers comprises individual- and community-level factors.

Study participants frequently reported a lack of trust in government and authorities as an important barrier to adherence.[15,17,18,24,27] As a focus group participant in one of the studies described,

'With the government, we already know, they're going to know and they're not going to let us know until a week or two later. . .'[15]

Apart from not trusting authorities, for community members, the fear of being stigmatized by their peers as a result of contracting a
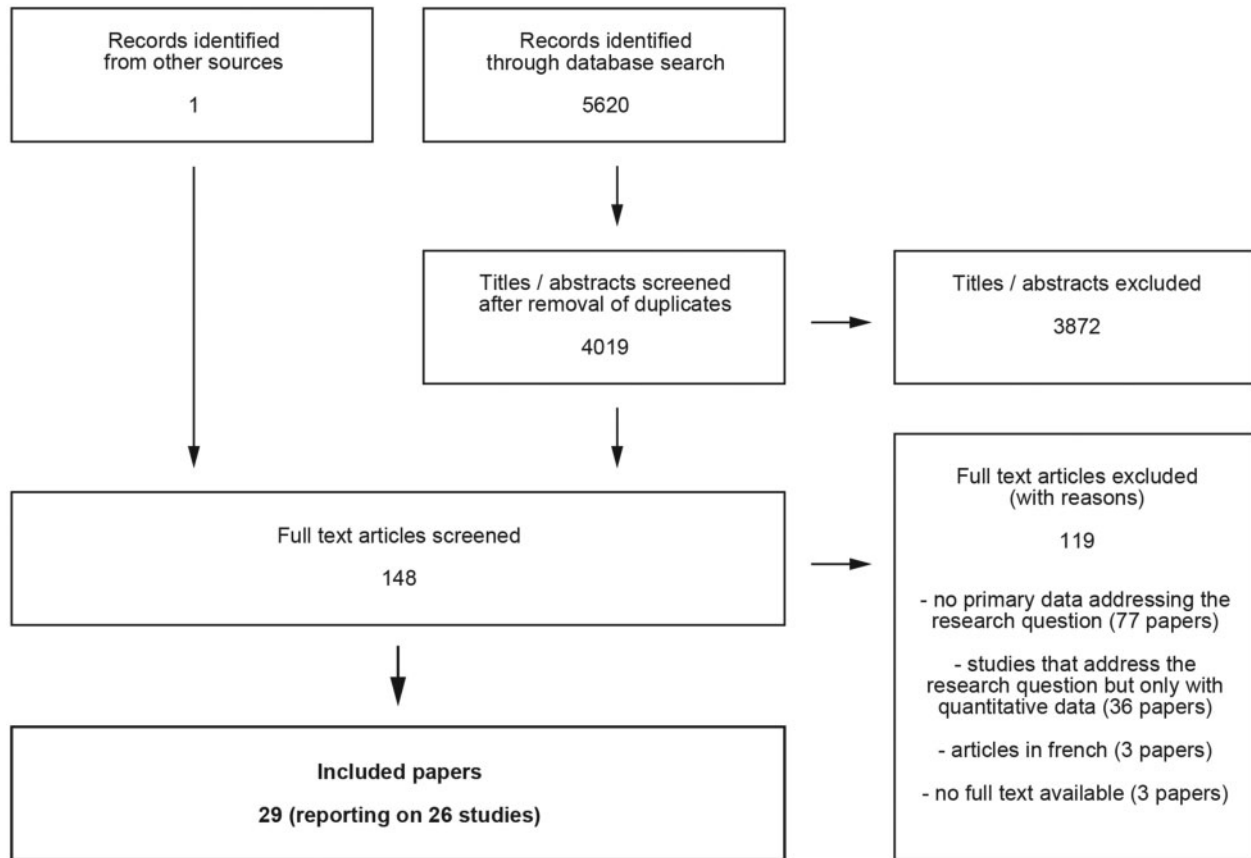
Figure 1 Flowchart for the systematic search and inclusion of studies.

disease or being in contact with a suspected case was perceived to be a strong barrier to social distancing,[14,19,24,25,32,34] as expressed by the following quote from a study in Senegal:

'I haven't worked because during this whole time, the[15]y looked at you a certain way because they all knew that I was among those who were held, so it's not been easy, you know…'[24]

In addition to the fear of stigma, the psychological stress induced by uncertainty and measures like quarantine[16,19,24–26,35] was frequently described as a major barrier.

'I thought of that movie (Ben Hur) all the time while I was in quarantine because I remember the part of him going and looking for his sister and his mother, where they had that … sickness, leprosy. And they could not be with the rest of the people… and that's how I felt. I was separate from the world.'[19]

Study participants further considered people's lack of knowledge and misconceptions about the disease,[14,18,20,30,39] inconsistencies between personal experience and information received,[12,18,20,38] a perceived lack of threat, and the perceived lack of value of interventions[15,20,24,33,37,39] to be barriers to social distancing adherence:

'I would have to weigh the amount of risk vs. the potential for panic and for there to be a backlash against the kinds of rules that are being instituted. … there's a balance between over-reacting and under-reacting to a situation …'[38]

Many study participants described a perceived lack of community collaboration[15–17,20,21,24,25,27,33] as an important barrier:

'But then I would think if I was to do this, the next, the next person isn't, why should I blow out the stops.'[33]

Feelings of solidarity on the other hand were described as crucial to overcome this barrier:

'We're all trying to be good citizens. And we're all trying to help, you know, other people by making sacrifices like being in quarantine.'[20]

Further influences that could become barriers were the inability to work and resulting financial hardship,[16,19] dependence on social networks and support systems,[15,16,34] social–cultural norms and perceived gender roles[13,18] as well as practical reasons like wanting or having to care for others.[33,39]

Perceived shortcomings in governmental and authority action

With regards to governmental and authority action, study participants lamented the lack of community involvement.[15,17,23,26,34,36,38]

'Listen to the average citizens. If there are task forces, citizens should be on each task force.'[15]

They further criticized the insufficiency of emotional, financial or material support and cited this as a key reason for non-adherence.[15,16,18,19,24,25,27,31,34,35,38,40]

'We had no food at the start. They should have given us food like they did in other households at the end.'[18]

Poor communication was identified as one of the most important factors affecting implementation and adherence to measurements. This included a lack of guidance and ambiguous messaging,[12,15,17,19,24,40] as demonstrated by the following quote from a study participant:

'I sometimes felt as if I was getting mixed messages. And even the ladies who called from Public Health … one I believe said when you're by yourself you didn't need the mask. But then the other one said, well no, you have to keep it on all the time.'[20]

Table 1 List of included studies

Study	Country	Participants	Study design	Aims	QA (CASP)
Abramowitz et al.[12]	Liberia	386 community leaders	15 FGDs	To identify 'mechanisms for community-based response' to a West African Ebola epidemic	Y/Y/U/U/U/N/Y/U/Y/Y
Adongo et al.[13]	Ghana	235 community members + 40 leaders	25 FGDs and 40 IDIs	To identify 'socio-cultural factors that may influence the prevention and containment of EVD in Ghana'	Y/Y/Y/Y/U/N/Y/U/Y/Y
Adongo et al.[14]	Ghana	235 community members + 40 leaders	25 FGDs and 40 IDIs	To explore 'community knowledge and attitudes about Ebola and its transmission'	Y/Y/Y/Y/U/N/Y/U/Y/Y
Baum et al.[15]	USA	37 community members	4 FGDs	'To evaluate public willingness to accept and comply with social distancing measures'	Y/Y/U/Y/U/N/N/U/Y/Y
Braunack-Mayer et al.[16]	Australia	21 participants with various backgrounds	2 deliberative forums	'To elucidate community perspectives on some of the strategies proposed for pandemic planning'	Y/Y/Y/U/Y/N/Y/U/Y/Y
Braunack-Mayer et al.[17]	Australia	56 school community members	Interviews	'To examine the implementation of school closures as a strategy to manage a local outbreak'	Y/Y/U/Y/U/N/Y/U/Y/Y
Caleo et al.[18]	Sierra Leone	20 households and 18 key informants	SSIs	'Understanding transmission dynamics and community compliance with control measures'	Y/Y/Y/Y/U/N/Y/U/Y/Y
Cava et al.[19]	Canada	21 individuals with quarantine experience	SSIs	'To explore the experience of home quarantine during the SARS outbreak in Toronto in 2003'	Y/Y/Y/Y/U/N/Y/U/Y/Y
Cava et al.[20]	Canada	21 individuals with quarantine experience	SSIs	'To explore the experience of being on SARS quarantine'	Y/Y/Y/Y/U/N/Y/U/Y/Y
Davis et al.[21]	Australia, Scotland	116 purposively chosen participants	57 interviews and 10 FGDs	'To identify how members of the general public respond to pandemic influenza'	Y/Y/Y/Y/Y/N/Y/Y/Y/Y
Davis et al.[22]	Australia, Scotland	116 purposively chosen participants	57 interviews and 10 FGDs	'To conceptualise how publics take on the threat of a global respiratory pathogen'	Y/Y/Y/Y/Y/N/U/Y/Y/Y
Davis et al.[23]	Australia	4 policymakers (and documents)	Interviews	'Understanding how pandemic control's assumptions regarding the general public take the specific form'	Y/Y/U/U/U/U/Y/Y/Y/Y
Desclaux et al.[24]	Senegal	43 contacts and 27 contact-tracers	SSIs	'Analysing contact cases' perceptions and acceptance of contact monitoring'	Y/Y/U/U/U/U/Y/U/Y/Y
DiGiovanni et al.[25]	Canada	35 community-based interviewees six FGDs	Interviews, FGDs	'To cull lessons from Toronto's experiences with … quarantine during the (2003 SARS outbreak)'	Y/Y/U/U/U/N/U/U/Y/Y
Faherty et al.[26]	USA	158 community members	36 FGDs	'To present perspectives … on the feasibility of implementing a range of social distancing practices'	Y/Y/U/U/Y/U/N/Y/U/Y/Y
Gray et al.[27]	Sierra Leone	65 community members	IDIs	To gain 'an understanding of community interactions with the Ebola response'	Y/Y/Y/Y/Y/N/Y/Y/Y/Y
Henrich and Holmes[28]	Canada	85 community members	11 FGDs	'To begin understanding the communication needs of the public and health care workers	Y/Y/Y/Y/Y/N/Y/U/Y/Y
King et al.[29]	Australia	42 parents	SSIs	'To explore what information sources parents trusted and used to obtain information about pH1N1'	Y/Y/Y/Y/Y/N/Y/U/Y/Y
Kinsman et al.[30]	Sierra Leone	132 community members	16 FGDs and 24 IDIs	'Development of a set of actionable Ebola messages that (responding to the community's)'	Y/Y/Y/Y/Y/Y/Y/U/Y/Y
Leung et al.[31]	Canada	19 service providers, officials and clinicians	SSIs	'To identify … challenges related to homeless people that arose during the SARS outbreak'	Y/Y/Y/Y/Y/N/Y/U/Y/Y

Table 1 Continued

Study	Country	Participants	Study design	Aims	QA (CASP)
Mitchell et al.[32]	USA	57 members of the university community	FGDs and interviews	'To explore attitudes and behaviours on campus during the first known university outbreak of (H1N1)'	Y/Y/Y/U/Y/ N/U/U/Y/Y
Morrison and Yardley[33]	England	31 community members	8 FGDs, 1 interview	'To develop an understanding of … factors (that influence) the adoption of …control measures'	Y/Y/Y/Y/Y/ N/Y/Y/Y/Y
Pellecchia et al.[34]	Liberia	462 community members	45 FGDs and 30 SSIs	'To assess Liberian community perspectives on State-imposed … outbreak containment measures'	Y/Y/Y/Y/U/ Y/Y/U/Y/Y
Pellecchia[35]	Liberia	Unclear	Observation, FGD, IDI	'To offer … reflections on quarantine and the events surrounding its implementation'	Y/Y/Y/U/U/ N/N/U/Y/Y
Rosella et al.[36]	Canada	40 PH officials and scientific advisors	SSIs	'To … identify the factors that influenced … the application of evidence for public health policy'	Y/Y/Y/Y/Y/ N/Y/Y/U/Y
Seale et al.[37]	Australia	20 university students	SSIs	'To measure the perceptions … of staff and students at our University (to the 2009 H1N1 pandemic)'	Y/Y/Y/Y/Y/ N/Y/U/Y/Y
Smith et al.[38]	Canada	17 community members	3 FGDs	'To (understand the) justifiability of using restrictive measures to achieve public health goals'	Y/Y/Y/Y/Y/ N/Y/Y/Y/Y
Teasdale and Yardley[39]	UK	48 community members	11 FGDs	'To explore factors that may influence responses to government advice for managing flu pandemics'	Y/Y/Y/Y/Y/ N/Y/U/Y/Y
Uscher-Pines et al.[40]	USA	17 pandemic planners	IDIs	'To guide future preparedness activities and the development of … recommendations for universities'	Y/Y/U/Y/U/ U/N/U/U/Y

FGDs, focus group discussions; IDI, in-depth interviews; PH, public health; SSIs, semi-structured interviews; QA, quality assessment; Y, yes, N, no; U, unclear.
The order of criteria follows the order in the CASP tool (1. clear statement of aims, 2. appropriate qualitative methodology, 3. appropriate research design, 4. appropriate recruitment, 5. appropriate data collection, 6. reflexivity, 7. ethical considerations, 8. rigour of data analysis, 9. clarity of statement of findings, 10. value of research).

Further aspects of poor communication cited by study participants were unsuitable messages,[12,17,19,28–31] a lack of credibility[17,20,27,32] as well the inadequacy of timing[12] and channels of communication.[15,22,25,30,38] Inadequate preparedness,[23,25,31] the lack of legislation and penalties[16,18,20,27,38] and authorities' failure to take equity into account[17,19,31] were additional barriers brought up by participants in a range of settings.

How to facilitate implementation of social distancing measures

Based on these barriers, and with due consideration of enablers of social distancing described in the included studies, the review identified 25 themes that can be addressed to improve the implementation of social distancing. These themes belong to one of the two broad categories described above. Additionally, because of the richness and coherence of data that support them, themes around communication are listed in a distinct sub-category (see table 2).

Data from the studies included in this review indicate that it is important to address stigmatization and the psychological burden of measures like quarantine.[14,16,19,24–26,32,34] Building trust in government and authorities as well as promoting confidence in the implemented measures are further opportunities for improvement.[15,17,18,20,24,27,33,37,39] Addressing solidarity, social responsibility and community collaboration promotes adherence and is a critical element of the response.[15–17,20,21,24,25,27,33]

With regards to actions taken by governments and authorities, the most central theme that emerged from the analysis of data in this review is the importance of providing support (emotional, medical, material and financial) for people who adhere to social distancing, so that no or few negative consequences stem from adherence.[15,16,18,19,24,25,27,31,34,38,40] Governments and authorities need to include the community in the planning before and in the response during epidemics.[15,17,23,26,34,36,38] Furthermore, the implementation of legislation and the use of penalties appear to be an acceptable means of increasing adherence to social distancing measures.[16,18,20,27,38]

Ultimately, the most central theme identified across studies is the critical importance of good communication.[17,19,20,22,23,25–33,38,39] Messages and messengers should be credible. Many study participants reported a mistrust of the media and instead asked that scientific experts be at the forefront of communication with the public. With regards to the dynamics of communication, there is broad coherence across the included studies regarding the importance of acknowledging uncertainty and the need for adaptation to changing circumstances. Messages should be tailored to the diverse communities of recipients,[28–31] and information should be context-specific and relevant to people's lives. Further important aspects identified were transparency, good timing, clarity and uniformity.[12,17,19,28–31]

Table 2 displays a complete list of review findings. Each finding is presented alongside its corresponding GRADE-CERQual confidence rating and the studies that contribute to it.

Discussion

To the authors' knowledge, this is the first systematic qualitative review focusing on the implementation of social distancing measures. The review identifies a list of 25 factors that can potentially

Table 2 Summary table of review findings and confidence assessment using the GRADE-CERQual approach

Review finding	Contributing studies (*N*)	Confidence (CERQual)	Notes on confidence rating
Psychological/psychosocial/sociological factors			
Avoiding stigma: Efforts should be made to avoid stigma in order to lower the psychosocial cost of adherence.	*N* = 6[14,19,24,25,32,34]	Moderate	Evidence from five countries (C) and three different epidemic threats (ET). High relevance and coherence, minor concerns around adequacy, and minor methodological concerns for some of the studies.
Emotional support: Addressing the psychological burden of quarantine and other SD measures is an important enabler of adherence.	*N* = 4[16,19,25,26]	Moderate	Evidence from 3C and 2ET. High relevance and coherence, minor concerns around adequacy, and minor methodological concerns for some of the studies.
Building trust: A lack of trust in government and authorities impedes people's adherence to SD and should be prevented through constant trust-building efforts.	*N* = 5[15,17,18,24,27]	Moderate	Evidence from four countries and 3ET. High relevance and coherence, minor concerns around adequacy, and minor methodological concerns for some of the studies.
Solidarity: Feelings of solidarity, social responsibility and the presence of community collaboration can be important in increasing acceptability of and adherence to measures.	*N* = 9[15–17,20,21,24,25,27,33]	Moderate	Evidence from 7C and 3ET. High relevance and coherence, minor concerns around adequacy, and minor methodological concerns for some of the studies.
Perceived threat and value of interventions: The perception of threat and the perception of interventions being effective ways to battle that threat are important for the adherence to measures.	*N* = 6[15,20,24,33,37,39]	Moderate	Evidence from 5C and 3ET. High relevance and coherence, minor concerns around adequacy, and minor methodological concerns for some of the studies.
Alignment of messaging and lived experience: People's personal experience being different from the depiction of the situation by media and authorities is a barrier to SD adherence.	*N* = 4[12,18,20,38]	Low	Evidence from 3C and 2 ET. High relevance and coherence, some concerns around adequacy, and minor methodological concerns.
Expecting unintended consequences: With regards to school closures, one problem with regards to social distancing is the compensatory increase in outside-of-school social activities.	*N* = 2[32,36]	Low	Evidence from 2 C regarding pandemic influenza. High relevance and coherence, some concerns around adequacy, and minor methodological concerns.
Accounting for life circumstances: Practical and circumstantial reasons like the need to care for others, the need to access services or simply the lack of space can be barriers to adherence to SD.	*N* = 2[33,39]	Very low	Evidence from 1 C regarding pandemic influenza. High relevance and coherence, major concerns around adequacy, and minor methodological concerns.
Addressing social norms: Perceived gender roles and habits like handshaking can be barriers to the implementation of Social Distancing measures.	*N* = 2[13,18]	Very low	Evidence from 2 C regarding Ebola. High relevance and coherence, major concerns around adequacy, and some methodological concerns.
Government/authority factors			
Government support: Authorities should provide support (emotional, medical, material, financial) for people who adhere to social distancing so that no (few) negative consequences stem from adherence.	*N* = 12[15,16,18,19,24,25,27,31,34,35,38,40]	High	Evidence from 6 C and 3 ET. High coherence, adequacy and relevance. Minor methodological concerns compensated by high-quality studies.
Community involvement: Involving communities is critical in the planning and response phases of epidemics.	*N* = 7[15,17,23,26,34,36,38]	Moderate	Evidence from 4 C and 2 ET. High relevance and coherence, minor concerns around adequacy, and minor methodological concerns for some of the studies.
Appropriate legislation: The implementation of legislation and the use of penalties appear to be acceptable and can increase adherence to SD measures.	*N* = 5[16,18,20,27,38]	Moderate	Evidence from 3 C and 3 ET. High relevance and coherence, minor concerns around adequacy, and minor methodological concerns for some of the studies.
Preparation is key: In order to enable implementation, pandemic plans should be sufficiently detailed and actionable. Preparedness can improve adherence to SD. An example of this are online learning capabilities of schools.	*N* = 5[17,23,25,31,40]	Moderate	Evidence from 3 C and 2 ET. High relevance and coherence, minor concerns around adequacy, and minor methodological concerns for some of the studies.

Table 2 Continued

Review finding	Contributing studies (*N*)	Confidence (CERQual)	Notes on confidence rating
Continuous communication: Authorities should provide constant updates and inform the public and especially those affected by social distancing measures like quarantine of new developments	*N* = 3[15,19,24]	Low	Evidence from 3 C and 3 ET. High relevance and coherence, some concerns around adequacy, and minor methodological concerns.
Balancing different interests: Where possible, social consequences of transmission control should be considered, and breaking social networks and support systems should be avoided.	*N* = 3[15,16,34]	Low	Evidence from 3 C and 2 ET. High relevance and coherence, some concerns around adequacy, and minor methodological concerns.
Taking equity into account: Governments and authorities should pay attention to equity issues which can be strong influences on adherence to SD.	*N* = 3[17,19,31]	Low	Evidence from 2 C and 2 ET. High relevance and coherence, some concerns around adequacy, and minor methodological concerns.
Being clear and transparent: Clear statements from public health authorities enable the implementation of measures like school closures.	*N* = 3[26,36,40]	Very low	Evidence from 2 C regarding pandemic influenza. High relevance and coherence, major concerns around adequacy, and some methodological concerns.
Providing constant reminders: The public should be reminded of necessary measures in order to avoid a regression to previous norms	*N* = 2[24,33]	Very low	Evidence from 2 C and 2 ET. High relevance and coherence, major concerns around adequacy, and some methodological concerns.
Communication-related factors			
Good communication is critical: Communication should be transparent, timely, clear and uniform, and it should acknowledge uncertainty and the need for adaptation to changing circumstances. Using appropriate channels of communication is important. People mistrust the media and call for experts to be on the forefront of communication with the public.	*N* = 14[17,19,20,22,23,25–33,38,39]	High	Evidence from 7C and 3ET. High coherence, adequacy and relevance. Minor methodological concerns compensated by high-quality studies.
Improving knowledge and addressing beliefs: Providing knowledge and battling misconceptions about the disease might be valuable ways to increase adherence to SD measures.	*N* = 4[14,22,37,39]	Moderate	Evidence from 4C and 2ET. High relevance and coherence, minor concerns around adequacy, and minor methodological concerns for some of the studies.
Relevance and context-specificity of messaging: Information provided to the public should be context specific and relevant to people's lives.	*N* = 7[12,17,19,28–31]	Moderate	Evidence from 5C and 3ET. High relevance and coherence, minor concerns around adequacy, and minor methodological concerns for some studies.
Tailoring messages to recipients' needs: Messaging should be tailored to the diverse communities of recipients. 'One size fits all' approaches should be avoided.	*N* = 4[28–31]	Moderate	Evidence from 3C and 3ET. High relevance and coherence, minor concerns around adequacy, and minor methodological concerns for some of the studies.
Doctors contributing as trusted messengers: Doctors, e.g. family physicians can act as highly trusted and influential messengers in the response.	*N* = 2[28,29]	Very low	Evidence from 2C focusing on pandemic influenza. High relevance and coherence, major concerns around adequacy, and some methodological concerns
Direct two-way communication: Direct two-way communication between e.g. schools and public health authorities can aid SD implementation.	*N* = 2[17,26]	Very low	Evidence from 2C focussing on pandemic influenza. High relevance and coherence, major concerns around adequacy, and methodology

C, countries; ET, epidemic threats; SD, social distancing.

affect the implementation of and adherence to social distancing measures. These factors can broadly be summarized under the themes of individual- or community-level psychosocial factors on the one hand, and government or authority factors on the other. While in reality there are likely many complex relationships between the different factors influencing social distancing acceptability, the schematic depiction in figure 2 may be a useful conceptual way to understand what determines people's willingness to adhere to social distancing.

Where aspects of social distancing were discussed in previous reviews, especially with regards to quarantine and isolation, there is broad agreement on the identified themes, which this review develops further.[2,5] Within the studies included in this review, there is broad agreement on the most central barriers and facilitators (as
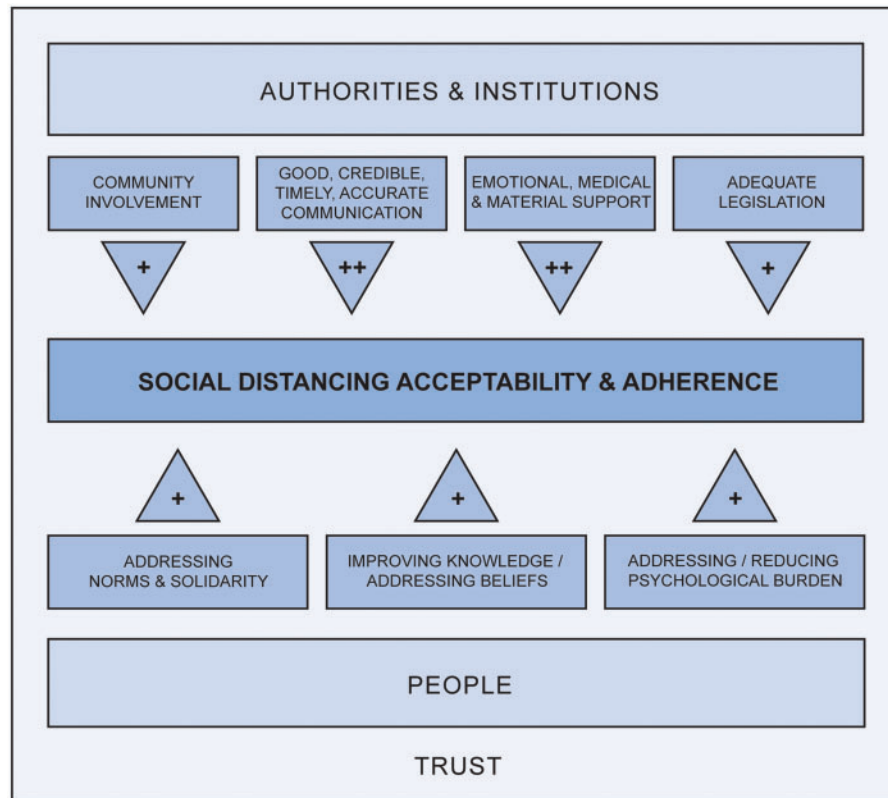
Figure 2 Factors influencing the acceptability of and adherence to social distancing measures. '+' indicates moderate confidence, and '++' indicates high confidence in the factor being an important enabler of social distancing acceptability and adherence.

indicated in our summary table 2). Even where there was not enough data to make a high-confidence statement, the review did not find substantial disagreement between the identified studies.

The review further supports the recent findings and recommendations of The Independent Panel for Pandemic Preparedness & Response (https://theindependentpanel.org/), especially with regards to the importance of community involvement and the role governments must play in mitigating social costs of the pandemic.

Implications for policymaking, service and communication

The review's findings demonstrate the importance of a comprehensive support system, transparent policies and sufficient community involvement. They all can contribute to adherence to social distancing measures and present opportunities for governments to improve the acceptability of mandated measures. The review further indicates that it is critical for policymakers and service providers to recognize the toll measures can take on people. The evidence from the review also shows that preventing stigma, appealing to solidarity, building trust and making sure that strong support systems are put in place are important in order to alleviate the hardship faced by the population that is expected to adhere to social distancing. Finally, effective, transparent, trustworthy communication appears to be a central enabler to the acceptability of and adherence to social distancing measures. Responsible communication should be transparent, timely, clear and uniform, and trusted experts should be at the forefront. Good communication acknowledges uncertainty and the need to adapt to changing circumstances. The evidence also suggests that messaging should be context-specific and relevant to people's lives. All of these recommendations are concrete and actionable opportunities for policymakers and service providers as well as anyone who communicates with the public.

Implications for future research

Barriers to and facilitators of social distancing have often been addressed implicitly in the qualitative studies that were identified in this review. Future qualitative research should address implementation more directly.

The systematic searches identified a number of quantitative studies that could complement the review findings in a meaningful way. A mixed-methods approach or a future quantitative review may be of value.

Moving forward, findings from this review can inform not only policy implementation but also the research design of future studies to evaluate social distancing measures, their acceptability, feasibility and potential effectiveness.

This review further underlines the importance of terminological specificity.

Limitations of this review

This review has a number of limitations. Firstly, the systematic searches could have been complemented by hand-searching journals and the grey literature.

With regards to whether or not results are broadly representative, included studies were conducted in a limited number of countries. This introduces uncertainty since these measures might be highly settings-dependent.

Importantly, the social distancing scenarios identified in this review are rather short-term, not as extensive, and not necessarily generalizable to COVID-19. During the coronavirus pandemic, the implementation of social distancing measures has shown to be necessary over a longer period of time, and a unique focus has been placed on the actual physical distance which might have a strong influence on adherence considering that this may be more or less impossible in some settings. Since no studies had been conducted on the COVID-19 pandemic at the time of the searches, the findings may not be completely representative of the present situation, but

they provide an indication of ways to improve the current as well as future pandemic responses. A scoping search we conducted in May 2021 indicated that while a number of new studies have been conducted, the main findings do not seem to have changed. A future review will have to assess new lessons learned and can benefit from the findings established in this work.

Finally, while it is sensible to try and evaluate social distancing broadly, and, as this review has indicated, many findings apply to all aspects of social distancing, it would be worthwhile to pay more attention to the specificities of each social distancing measure, both for evaluating current literature and for future research.

Conclusions

This review demonstrates that there is a range of barriers, on different levels, to the implementation of social distancing measures. Some of the key findings are the need for authorities to involve their communities, the need to provide continuous support to those who adhere to social distancing, and the critical importance of good communication. These and many other factors appear to influence the acceptability of social distancing and people's adherence to measures that are necessary for the pandemic response. Policies should be designed with these factors in mind to ensure an effective, ethical and equitable pandemic response.

Supplementary data

Supplementary data are available at *EURPUB* online.

Funding

Key Points

- In order to increase the acceptability of social distancing measures, there is a critical need for timely, clear and uniform communication that acknowledges uncertainty and the need for adaptation to changing circumstances.
- Governments and authorities need to provide financial and non-financial support so that no or few negative consequences stem from adherence.
- Feelings of solidarity and trust are major enablers of adherence to social distancing and should be addressed in communicating with the public.
- Communities should be actively involved in the planning of measures.
- Individuals base their decisions regarding adherence to social distancing on factors like the perceived threat and the perceived value of interventions which therefore should be at the centre of good communication.

References

1   ECDC. Considerations relating to social distancing measures in response to COVID-19 – second update. European Centre for Disease Control (ECDC); 2020. Available at: https://www.ecdc.europa.eu/en/publications-data/considerations-relating-social-distancing-measures-response-covid-19-second (10 April 2020, date last accessed).

2   Teasdale E, Santer M, Geraghty AWA, et al. Public perceptions of non-pharmaceutical interventions for reducing transmission of respiratory infection: systematic review and synthesis of qualitative studies. *BMC Public Health* 2014;14: 589.

3   Fong MW, Gao H, Wong JY, et al. Nonpharmaceutical measures for pandemic influenza in nonhealthcare settings-social distancing measures. *Emerg Infect Dis* 2020;26:976–984.

4   Nussbaumer-Streit B, Mayr V, Dobrescu AI, et al. Quarantine alone or in combination with other public health measures to control COVID-19: a rapid review. *Cochrane Database Syst Rev* 2020:CD013574. Available at: http://doi.wiley.com/10.1002/14651858.CD013574 (16 April 2020, date last accessed).

5   Brooks SK, Webster RK, Smith LE, et al. The psychological impact of quarantine and how to reduce it: rapid review of the evidence. *Lancet* 2020;395:912–20.

6   Viner RM, Russell SJ, Croker H, et al. School closure and management practices during coronavirus outbreaks including COVID-19: a rapid systematic review. *Lancet Child Adolesc Health* 2020;4:397–404.

7   Critical Appraisal Skills Programme (2019). CASP (Qualitative) Checklist. Available at: https://casp-uk.net/wp-content/uploads/2018/01/CASP-Qualitative-Checklist-2018.pdf (26 October 2020, date last accessed).

8   Britten N, Campbell R, Pope C, et al. Using meta ethnography to synthesise qualitative research: a worked example. *J Health Serv Res Policy* 2002;7:209–15.

9   Lewin S, Glenton C, Munthe-Kaas H, et al. Using qualitative evidence in decision making for health and social interventions: an approach to assess confidence in findings from qualitative evidence syntheses (GRADE-CERQual). *PLoS Med* 2015; 12:e1001895.

10 Moher D, Liberati A, Tetzlaff J, Altman DG; The PRISMA Group. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *PLoS Med* 2009;6:e1000097.

11 Tong A, Flemming K, McInnes E, et al. Enhancing transparency in reporting the synthesis of qualitative research: ENTREQ. *BMC Med Res Methodol* 2012;12:181.

12 Abramowitz SA, McLean KE, McKune SL, et al. Community-centered responses to Ebola in urban Liberia: the view from below. *PLoS Negl Trop Dis* 2015;9:e0003706.

13 Adongo PB, Tabong PT-N, Asampong E, et al. Preparing towards preventing and containing an Ebola virus disease outbreak: what socio-cultural practices may affect containment efforts in Ghana? *PLoS Negl Trop Dis* 2016;10:e0004852.

14 Adongo PB, Tabong PT-N, Asampong E, et al. Beyond knowledge and awareness: addressing misconceptions in ghana's preparation towards an outbreak of Ebola virus disease. *PLoS One* 2016;11:e0149627.

15 Baum NM, Jacobson PD, Goold SD. "Listen to the people": public deliberation about social distancing measures in a pandemic. *Am J Bioeth* 2009;9:4–14.

16 Braunack-Mayer AJ, Street JM, Rogers WA, et al. Flu Views Team. Including the public in pandemic planning: a deliberative approach. *BMC Public Health* 2010;10: 501.

17 Braunack-Mayer A, Tooher R, Collins JE, et al. Understanding the school community's response to school closures during the H1N1 2009 influenza pandemic. *BMC Public Health* 2013;13:344.

18 Caleo G, Duncombe J, Jephcott F, et al. The factors affecting household transmission dynamics and community compliance with Ebola control measures: a mixed-methods study in a rural village in Sierra Leone. *BMC Public Health* 2018;18: 248.

19 Cava MA, Fay KE, Beanlands HJ, et al. The experience of quarantine for individuals affected by SARS in Toronto. *Public Health Nurs* 2005;22:398–406.

20 Cava MA, Fay KE, Beanlands HJ, et al. Risk perception and compliance with quarantine during the SARS outbreak. *J Nursing Scholarship* 2005;37:343–7.

21 Davis MDM, Stephenson N, Lohm D, et al. Beyond resistance: social factors in the general public response to pandemic influenza. *BMC Public Health* 2015;15:436.

22 Davis M, Lohm D, Flowers P, et al. "We became sceptics": fear and media hype in general public narrative on the advent of pandemic influenza. *Sociol Inq* 2014;84: n/a–518.

23 Davis M, Stephenson N, Flowers P. Compliant, complacent or panicked? Investigating the problematisation of the Australian general public in pandemic influenza control. *Soc Sci Med* 2011;72:912–8.

24 Desclaux A, Badji D, Ndione AG, Sow K. Accepted monitoring or endured quarantine? Ebola contacts' perceptions in Senegal. *Soc Sci Med* 2017;178:38–45.

25 DiGiovanni C, Conley J, Chiu D, Zaborski J. Factors influencing compliance with quarantine in Toronto during the 2003 SARS outbreak. *Biosecur Bioterror* 2004;2: 265–72.

26 Faherty LJ, Schwartz HL, Ahmed F, et al. Uscher-Pines L. School and preparedness officials' perspectives on social distancing practices to reduce influenza transmission

during a pandemic: considerations to guide future work. *Prev Med Rep* 2019;14: 100871.

27 Gray N, Stringer B, Bark G, et al. "When Ebola enters a home, a family, a community": a qualitative study of population perspectives on Ebola control measures in rural and urban areas of Sierra Leone. *PLoS Negl Trop Dis* 2018;12: e0006461.

28 Henrich N, Holmes B. Communicating during a pandemic: information the public wants about the disease and new vaccines and drugs. *Health Promot Pract* 2011;12: 610–9.

29 King CL, Chow MYK, Wiley KE, Leask J. Much ado about flu: a mixed methods study of parental perceptions, trust and information seeking in a pandemic. *Influenza Other Respir Virus* 2018;12:514–21.

30 Kinsman J, de Bruijne K, Jalloh AM, et al. Development of a set of community-informed Ebola messages for Sierra Leone. *PLoS Negl Trop Dis* 2017;11:e0005742.

31 Leung CS, Ho MM, Kiss A, et al. Homelessness and the response to emerging infectious disease outbreaks: lessons from SARS. *J Urban Health* 2008;85:402–10.

32 Mitchell T, Massoudi M, Swerdlow DL, et al. Swine flu in college: early campus response to outbreak control measures. *Am J Health Behav* 2014;38:448–64.

33 Morrison LG, Yardley L. What infection control measures will people carry out to reduce transmission of pandemic influenza? A focus group study. *BMC Public Health* 2009;9:258.

34 Pellecchia U, Crestani R, Decroo T, et al. Social consequences of Ebola containment measures in Liberia. *PLoS One* 2015;10:e0143036.

35 Pellecchia U. Quarantine and its malcontents how Liberians responded to the Ebola epidemic containment measures. *Anthropol Action-J Appl Anthropol Policy Pract* 2017;24:15–24.

36 Rosella LC, Wilson K, Crowcroft NS, et al. Pandemic H1N1 in Canada and the use of evidence in developing public health policies – a policy analysis. *Soc Sci Med 1982* 2013;83:1–9.

37 Seale H, Mak JPI, Razee H, MacIntyre CR. Examining the knowledge, attitudes and practices of domestic and international university students towards seasonal and pandemic influenza. *BMC Public Health* 2012;12. doi: 10.1186/1471-2458-12-307.

38 Smith MJ, Bensimon CM, Perez DF, et al. Restrictive measures in an influenza pandemic: a qualitative study of public perspectives. *Can J Public Health* 2012;103: e348–52–e352.

39 Teasdale E, Yardley L. Understanding responses to government health recommendations: public perceptions of government advice for managing the H1N1 (swine flu) influenza pandemic. *Patient Educ Couns* 2011;85:413–8.

40 Uscher-Pines L, Chernak E, Alles S, Links J. College and university planning for pandemic influenza: a survey of Philadelphia schools. *Biosecur Bioterror* 2007;5: 249–54.