## PEER REVIEW HISTORY



## ARTICLE DETAILS

| | |
|---|---|
| **TITLE (PROVISIONAL)** | What influences people's responses to public health messages for managing risks and preventing infectious diseases? A rapid systematic review of the evidence and recommendations |
| **AUTHORS** | Ghio, Daniela; Lawes- Wickwar, Sadie; Tang, Mei; Epton, Tracy; Howlett, Neil; Jenkinson, Elizabeth; Stanescu, Sabina; Westbrook, Juliette; Kassianos, Angelos; Watson, Daniella; Sutherland, Lisa; Stanulewicz, Natalia; Guest, Ella; Scanlan, Daniel; Carr, Natalie; Chater, Angel; Hotham, Sarah; Thorneloe, Rachael; Armitage, Chris; Arden, Madelynne; Hart, Jo; Byrne-Davis, Lucie; Keyworth, Christopher |

## VERSION 1 – REVIEW

| | |
|---|---|
| **REVIEWER** | Grimani, Aikaterini<br>University of Warwick, Warwick Business School |
| **REVIEW RETURNED** | 31-Mar-2021 |

| | |
|---|---|
| **GENERAL COMMENTS** | This is a timely rapid review. However, I would encourage the authors to revise the current version of the paper, given that there are some points, which need to be developed or clarified further. Namely, there are the following:<br>1. In the "Review aims" section, the authors mention, "To conduct a rapid systematic review…" As this is a rapid systematic review, I suggest including this in the title "What influences people's responses to public health messages for managing risks and preventing infectious diseases? A rapid systematic review of the evidence and recommendations". I also suggest being consistent and referring to as a rapid systematic review instead of systematic review.<br>2. I didn't find anywhere to explicitly mention the primary (and secondary if applicable) outcomes of the study. I suggest to explicitly presenting them in the eligibility criteria section and in the abstract.<br>3. Non-English language papers were excluded. I understand the authors were not able to devote time and resources to translating full papers written in language other than English (LOE), but perhaps they could include LOE (abstracts for which are generally in English) and provide a list of these references in appendix.<br>4. I felt confused regarding the number of studies included. In the abstract, the authors refer to 70 studies (however, they mention 3 systematic reviews, 54 individual papers and 14 pre-prints). Those are 71 studies in total. In the results section (p.6, lines 25-28) the authors mention 3 systematic reviews, 56 individual peer-reviewed papers and 13 preprints (in total 72 studies). Please amend accordingly.<br>5. Page 4 information sources: the authors used one health database and one psychological database, the healthevidence.org |

| | |
|---|---|
| | for relevant systematic reviews and PsyArXiv and OSF Preprints for grey literature. However, it is very likely that relevant research was excluded as the authors didn't use google scholar nor hand-searching or reference lists of relevant reviews and single studies.<br>6. In the eligibility criteria section, I suggest the authors presenting more explicitly the population. For example, to mention that there were no health condition restrictions or region restrictions. The authors need to explicitly present the outcomes (please see the comment above).<br>7. Study selection: "Titles/abstracts (80% double screened) and full texts were screened by 15 authors". Did the authors calculate the interrater reliability either calculating Kappa or the percent agreement?<br>8. Data extraction section (page 5): "Two authors screened and completed a data quality check using Mixed Methods Appraisal Tool6 for the 54 individual papers and AMSTAR7 for the systematic reviews." This means that the authors assessed the quality of the peer-reviewed studies only and the systematic reviews. If this is correct, why the authors didn't assess the quality of the pre-prints? Using unpublished studies arises a limitation; however, this could be handled by reviewing their quality independently.<br>9. Did the authors calculate the levels of agreement regarding the quality assessment?<br>10. In the results section (page 6): "The papers focused mainly on Influenza A virus subtype H1N1 (n=20), Covid-19 (n=15) and Ebola (n=11)…" I suggest to include "other diseases= xx").<br>11. It was quite difficult to follow the results. I am not sure how the authors handled the data of each study design. The authors didn't describe how they analysed and synthesised the data. I believe a paragraph presenting data analysis and synthesis is missing. It would be helpful if the authors group the studies regarding their type design and present them in different tables instead of one table (appendix 4).<br>12. Dorison 2020: The reference for this study is missing.<br>13. Rename figures: All the figures referred as figure 1.<br>14. In figure 3, the arrows that match the first column with the second column are not distinct.<br>15. Appendix 2: please change the numbers accordingly (please see comment 4) |

| | |
|---|---|
| **REVIEWER** | Pavey, Louisa<br>Kingston University, Department of Psychology |
| **REVIEW RETURNED** | 11-Apr-2021 |

| | |
|---|---|
| **GENERAL COMMENTS** | This systematic review identifies key factors that influence the effective design of health messages and interventions aimed at preventing infectious disease. The review is concisely presented and makes a useful contribution to the literature by providing recommendations for the design of effective public health messages.<br><br>There are a number of areas in the reporting of the review that I believe would benefit from revision:<br><br>1. The abstract alludes to five recommendations, whereas in the recommendations and conclusions section four broad themes and recommendations are presented. Please check to ensure consistency throughout the review to aid the reader in navigating the information presented. |

| | |
|---|---|
| | 2. In the results section, the authors list a number of key variables that are not discussed further in the recommendations section (e.g., the role of emotion). Do the cognitive factors referred to include social-cognitive factors such as perceived social norms? It would be better if the authors more closely aligned the key variables listed in the results section with their discussion of recommendations, or noted how each of these variables informed the recommendations.<br><br>3. Regarding recommendation 1c: How would a public health campaign address this, and what are the barriers to motivating people to take part in this training? It would be useful to link this recommendation back to the proposed theoretical framework (COM-B model) noted at the start of the review.<br><br>4. Some of the sub-themes discussed in the recommendations section are poorly supported with the evidence reviewed. For example, recommendations outlined in section 2b is too vague and include broad over-generalised statements. How should differences between countries be explained- when and by whom? Evidence to support these statements or more detail of the recommendations is needed. In section 2d, it is also important to note that it may be perceptions of the source as credible and legitimate, rather than objectively defined legitimacy or credibility which is important in determining acceptance of the information.<br><br>5. The limitations section I believe needs expanding to consider the diversity of papers examined. The reviewed studies regarded different infectious diseases and were likely subject to a broad range of socio-political and contextual influences on message acceptance. It would also be prudent to note the role of individual differences in moderating the effect of messaging strategy on message acceptance. Were individual-difference moderators identified in the papers reviewed? There is a danger of over-simplifying the findings from the literature, and a more critical approach throughout the review would be welcomed.<br><br>Minor points:<br><br>Page 8, line 29, sentence needs revision.<br>Page 9, line 30, I do not follow this statement. Why does this therefore mean that credible community sources are valuable? Is this classed as an unofficial or official source? What is the media referring to in this context- do media sources include social or trusted media/news reports?<br>Page 9, line 43, the subheading needs revision.<br>Page 10, line 11, why is this surprising? Remove the word ‘even’ here.<br>Page 11, line 8, how does this final statement fit with the media recommendation theme- were prompts using particular media used in the study?<br>Page 14, section 4a, how does the role of empathy affect the narrative vs. factual message effects?<br>Page 14, line 36, the reference here would support a conclusion that it is anxiety or worry driving these effects rather than social responsibility. The authors should make it clear that it is a different study that examines message framing around pro-social responsibility. |

| | |
|---|---|
| | Page 15, section 4c, this subheading does not seem to accurately describe what is included in this section. Perhaps consider revising sections 4b and 4c to include clearer support for each recommendation.<br>Page 15, section 4d, this corresponds with widely accepted findings on the importance of self-efficacy in message framing. It would be helpful to integrate discussion of the social cognition models (currently found in the limitations section), in some of the sub sections of the review recommendations.<br>Figure 1. It is not clear how some of the notes in this diagram correspond with what has been described in the review. For example, 'relevance and relatable', and 'resilience in communities' is too vague and it is not clear why this is in the 'impact on perceptions' category. There are some typos in the diagram (e.g., 'credibility' and 'emphasis'). |

**VERSION 1 – AUTHOR RESPONSE**

| Reviewer Comments | Responses | Changes in Manuscript |
|---|---|---|
| Reviewer 1 comments | | |
| 1. In the "Review aims" section, the authors mention, "To conduct a rapid systematic review…" As this is a rapid systematic review, I suggest including this in the title "What influences people's responses to public health messages for managing risks and preventing infectious diseases? A rapid systematic review of the evidence and recommendations". I also suggest being consistent and referring to as a rapid systematic review instead of systematic review. | Thank you for this suggestion, we agree that this would be consistent, and we changed the title as Reviewer 1 as suggested and ensured that we included rapid when referring to our rapid systematic review. | Changed title page 1 also changed mentions of systematic review to rapid systematic review |
| 2. I didn't find anywhere to explicitly mention the primary (and secondary if applicable) outcomes of the study. I suggest to explicitly presenting them in the eligibility criteria | Thank you for the opportunity to clarify this point in our methods section. We have now added an explanation about our primary and | Added in Abstract under Study Selection:<br><br>(b) concerned a communicable disease spread via primary route of transmission of respiratory and/or touch (human to human contact), <u>outcomes of interest included preventative behaviours, perceptions,</u> |

| | | |
|---|---|---|
| section and in the abstract. | secondary outcomes. | intentions and awareness. Non-English language papers were excluded.<br><br>Added under Eligibility criteria page 6<br><br>"To ensure a broad range of literature relating to epidemics/pandemics/ health crisis communication could be captured studies were not excluded based on outcome. However, outcomes of interest included preventative behaviours (e.g. handwashing, quarantining), perceptions (e.g. risk), intent, and awareness. " |
| 3. Non-English language papers were excluded. I understand the authors were not able to devote time and resources to translating full papers written in language other than English (LOE), but perhaps they could include LOE (abstracts for which are generally in English) and provide a list of these references in appendix. | We thank the reviewer for this suggestion, this could be useful in future to consider for rapid reviews as a point of reference rather than to include within the data extraction. For this current review it would not have been possible to use the data from the abstracts as we then would not have been able to know the quality of the evidence. | N/A |
| 4. I felt confused regarding the number of studies included. In the abstract, the authors refer to 70 studies (however, they mention 3 systematic reviews, 54 individual papers and 14 pre-prints). Those are 71 studies in total. In the results section (p.6, lines 25-28) the authors mention 3 systematic reviews, 56 individual peer-reviewed papers and 13 preprints (in total | We apologise about this confusion and we thank the reviewer for pointing this inconsistency in the numbers. We have amended the final count of the papers and ensured that it is consistent in all points of mentioning the total number of studies. | Numbers have been updated to reflect the final included papers that were synthesised in the narrative and then in the recommendations. |

| | | |
|---|---|---|
| 72 studies). Please amend accordingly. | | |
| 5. Page 4 information sources: the authors used one health database and one psychological database, the healthevidence.org for relevant systematic reviews and PsyArXiv and OSF Preprints for grey literature. However, it is very likely that relevant research was excluded as the authors didn't use google scholar nor hand-searching or reference lists of relevant reviews and single studies. | Thank you for this comment. We avoided using Google Scholar as the algorithm personalises searches and does not allow searches to be exactly replicated. Regarding hand searching – we acknowledged this may be a limitation, but within the timeframe we could not do ascendancy or descendancy searches – we have now added this clarification to provide transparency regarding our searches. | At the end of the section of information sources in the methods section we have added:<br><br>Our search strategy was piloted with a scoping review to ensure that the terms were capturing all relevant literature and to also choose which databases to search. These terms were then shared within the team and with public health practitioners and behaviour science experts for feedback using an iterative process to finalise our search terms.<br><br>We have also added under the limitations section in the discussion a point about not being able to conduct backward and forward citation searching which is underlined here:<br><br>Although we searched multiple databases systematically it is possible that relevant research was excluded from this review since we did not have the resources to translate non-English language papers in such a short space of time or conduct backward and forward citation searching. |
| 6. In the eligibility criteria section, I suggest the authors presenting more explicitly the population. For example, to mention that there were no health condition restrictions or region restrictions. The authors need to explicitly present the outcomes (please see the comment above). | Thank you for this suggestion and for the opportunity to add clarification regarding the population. We have now added more information about not having limitations on population or region. | Under Eligibility Criteria we added what is underlined to the first bullet point:<br><br>Papers were included if they:<br><br>● evaluated a public-health messaging intervention targeted at adults aged 18 years and above (no limitations on population or region), |
| 7. Study selection: "Titles/abstracts (80% double screened) and full texts were screened by 15 authors". Did the authors calculate the | We didn't calculate the interrater reliability but the number of conflicts were very low and have now reported | Added under study selection in the methods section percentage that were conflicted regarding inclusion during title and abstract screening this is underlined here: |

| | | |
|---|---|---|
| interrater reliability either calculating Kappa or the percent agreement? | this in the manuscript. | Conflicts over inclusion (2.3% had disagreements) were resolved through discussions with 4 authors |
| 8. Data extraction section (page 5): "Two authors screened and completed a data quality check using Mixed Methods Appraisal Tool6 for the 54 individual papers and AMSTAR7 for the systematic reviews." This means that the authors assessed the quality of the peer-reviewed studies only and the systematic reviews. If this is correct, why the authors didn't assess the quality of the pre-prints? Using unpublished studies arises a limitation; however, this could be handled by reviewing their quality independently. | Thank you for this suggestion – we have reviewed quality of the preprints through two independent checks and then agreement across the two were checked and disagreements were discussed amongst three authors. | We have added preprints quality check table<br><br>Characteristics of the papers (e.g. type of message, quality of study), the type of health risk and results were extracted (Appendix 4). ~~Two~~ Four authors (JW, SS, NC, DS) screened and completed a data quality check using Mixed Methods Appraisal Tool[6] for the 54 individual papers, the 11 pre-prints and AMSTAR[7] for the systematic reviews (Appendix 5)." |
| 9. Did the authors calculate the levels of agreement regarding the quality assessment? | As we had multiple reviewers checking for data quality, we calculated the levels of agreement which was 61% across the four reviewers. | At the end of the Data extraction section, we added information about levels of agreement:<br><br>"Overall, there was a moderate agreement level between the reviewers with 61% level of agreement. Disagreements were resolved through discussion with moderators. " |
| 10. In the results section (page 6): "The papers focused mainly on Influenza A virus subtype H1N1 (n=20), Covid-19 (n=15) and Ebola (n=11)…" I suggest to include "other diseases= xx"). | Thank you for this suggestion we have now included the number of other diseases. | In the first paragraph of the Results section, we have added what's underlined here:<br><br>"The papers focused mainly on Influenza A virus subtype H1N1 (n=20), Covid-19 (n=15) and Ebola (n=11), other diseases (n= 13) which have emerged.." |

<table>
<tr>
<td>11. It was quite difficult to follow the results. I am not sure how the authors handled the data of each study design. The authors didn't describe how they analysed and synthesised the data. I believe a paragraph presenting data analysis and synthesis is missing. It would be helpful if the authors group the studies regarding their type design and present them in different tables instead of one table (appendix 4).</td>
<td>We have added a paragraph in the results section explaining how we handled the data.</td>
<td>We added more information under synthesis of results in the Methods section to explain how we used NVivo to data manage the results and data:<br><br>"…in order to describe the recommendations for effective delivery of public health messages. These were exported into NVivo (Version 12) to data manage the combined results of different papers. To establish trustworthiness in data analysis, discussions among several members of the study team were held at fortnightly intervals to develop the coding framework, and to discuss, refine, and group the emerging codes into overall explanatory themes. All study authors were involved in establishing the conceptual framework."<br><br>Added in the Results section as a second paragraph:<br><br>A narrative analysis of the papers was conducted on what was mostly qualitative work that reported on determinants of intent to adhere to guidelines, these were organised according to preconceptions and understanding of the threat, perceived susceptibility and perceived risk severity (threat appraisal). This narrative analysis is presented in Appendix 6. Across the different themes and sub-themes developed about community engagement, messages for sub-populations, increasing trust, perceptions and understanding of threat and threat appraisal we developed four areas of recommendations to provide evidence based steps to be taken to provide effective public health messaging during pandemics/epidemics. These recommendations are cross-referenced to the narrative synthesis in Table 1 and the recommendations are reported below with evidence summarised.<br><br>Added Table 1:<br><br>
<table>
<tr><td>Recommendation</td><td>Cross-reference to narrative synthesis in appendix 6</td></tr>
<tr><td colspan="2">1. Engaging with key stakeholders and communities</td></tr>
</table>
</td>
</tr>
</table>

| | | | | |
|---|---|---|---|---|
| | | | 1.a. involve community leaders and others perceived as credible sources within the community | Community engagement<br><br>messages for sub-populations<br><br>increasing trust |
| | | | 1.b. Tailoring help make the key messages applicable to an individual's situation | |
| | | | 1.c. Consider any difficulties accessing information and levels of literacy | |
| | | | 1.d. Use different media for delivery and match delivery to the population's needs and perceptions | |
| | | | 2. Addressing uncertainty immediately with transparency | |
| | | | 2.a. Address uncertainty and changing information that may exist during an ongoing public-health crisis | Increase trust<br><br>Preconceptions and understanding threat<br><br>Timing – beginning of health-crisis |
| | | | 2.b. Consistency and co-ordination between different sources of information | |
| | | | 2.c. Be transparent: admit errors and unknowns | |

| | | |
|---|---|---|
| | | <table><tr><td>whenever appropriate</td><td></td></tr><tr><td>2.d. Be transparent: identify sources of information</td><td></td></tr><tr><td colspan="2">3. Unified messages</td></tr><tr><td>3.a. make core messages consistent</td><td>Increase trust<br><br>Threat appraisal<br><br>Preconceptions and understanding threat</td></tr><tr><td>3.b. identify inconsistencies across sources</td><td></td></tr><tr><td>3.c. increase awareness of the risks of the virus to their own health and the health of others</td><td></td></tr><tr><td colspan="2">4. Message framing</td></tr><tr><td>4.a. increase understanding of health threat</td><td>Preconceptions and understanding threat<br><br>Threat appraisal<br><br>Community engagement</td></tr><tr><td>4.b. to consider social responsibility</td><td></td></tr><tr><td>4.c. language choice to explain severity</td><td></td></tr><tr><td>4.d. promote sense of personal control</td><td></td></tr></table><br>Changed the table into smaller tables (tables 1 to 4) according to the research designs in Appendix 4. |
| 12. Dorison 2020: The reference for this study is missing. | Thank you for picking this up – this reference has been removed as it was not included in the final analysis as it was a protocol preprint without data established after second | Removed reference from tables. |

| | | |
|---|---|---|
| | screening of the pre-prints. | |
| 13. Rename figures: All the figures referred as figure 1. | Thank you – we have ensured that all the figures are numbered accordingly. | Figures are all numbered according to where they are placed in the manuscript. |
| 14. In figure 3, the arrows that match the first column with the second column are not distinct. | Thank you for this observation we have now changed the colours and made more space so that the arrows are more distinct. | Each box have different mapped coloured arrows and we have increased the space between the two columns so that there is more space for the arrows to be more distinct in Figure 3. |
| 15. Appendix 2: please change the numbers accordingly (please see comment 4) | Thank you for this observation, we have gone through to make sure that those we had removed after a second screening of the data extraction, and those papers that we removed because they were diseases with different routes of transmission. The numbers are now consistent and correct. | Tables in the Appendix are all correct. |
| Reviewer 2 | | |
| 1. The abstract alludes to five recommendations, whereas in the recommendations and conclusions section four broad themes and recommendations are presented. Please check to ensure consistency throughout the review to aid the reader in navigating the | Thank you for pointing this out, we have clarified the abstract to map to the recommendations in the results to ensure consistency. | Mapped to recommendations removed the extra one that had been merged in a recommendation. Changes are underlined below and what has been removed is crossed out:<br><br>There are ~~five~~ <u>four</u> key recommendations: (1) engage communities in the development of public-health messaging, (2~~) use credible and legitimate sources, (3)~~ address uncertainty immediately and with transparency, (~~4~~3) focus on unifying messages from all sources, and (~~5~~4) ~~develop~~ <u>frame</u> messages aimed at increasing understanding, induce social responsibility and empower personal control. Embedding these principles of behavioural science |

| | | |
|---|---|---|
| information presented. | | into public health messaging is an important step towards more effective health-risk communication during epidemics/pandemics. |
| 2. In the results section, the authors list a number of key variables that are not discussed further in the recommendations section (e.g., the role of emotion). Do the cognitive factors referred to include social-cognitive factors such as perceived social norms? It would be better if the authors more closely aligned the key variables listed in the results section with their discussion of recommendations, or noted how each of these variables informed the recommendations. | Thank you for this insightful comment, we have taken your comments into consideration and have mapped back to theory that can be helpful when addressing the recommendations to provide alignment of key variables within the discussions of the recommendations. | Throughout manuscript. |
| 3. Regarding recommendation 1c: How would a public health campaign address this, and what are the barriers to motivating people to take part in this training? It would be useful to link this recommendation back to the proposed theoretical framework (COM-B model) noted at the start of the review. | Thank you for this suggestion, we have added more information to link back to the COM-B model to consider regarding capacity and motivation and the link with other recommendations that could be useful when applying these recommendations. | Under 1c we have added more information to link back to the COM-B in the last paragraph of this section, what was added is underlined here:<br><br>Some people have limited experiences of engaging in recommended behaviours (e.g. using face-coverings or a thermometer).[33] <u>These limited experiences</u> highlight~~ing~~ a need for training/skill development to <u>be included</u> as part of a public-health campaign. This will improve health literacy, especially when it refers to 'new' behaviours. <u>Including training/skill development fits in with taking a COM-B model approach in developing public health messaging as it increases an individual's physical/psychological capabilities. Benefits to taking this approach could be enhanced with equally improving motivation (reflective and automatic) by considering other recommendations (e.g. recommendation 4 Message framing) as well as considering opportunity for behaviour (social and physical) which can identify potential barriers (e.g. social norms).</u> |

| | | |
|---|---|---|
| 4. Some of the sub-themes discussed in the recommendations section are poorly supported with the evidence reviewed. For example, recommendations outlined in section 2b is too vague and include broad over-generalised statements. How should differences between countries be explained- when and by whom? Evidence to support these statements or more detail of the recommendations is needed. In section 2d, it is also important to note that it may be perceptions of the source as credible and legitimate, rather than objectively defined legitimacy or credibility which is important in determining acceptance of the information. | Thank you for this point -we have added points for clarifications to ensure that the recommendations are clearer from the evidence we have developed from the narrative synthesis. | We have added information to acknowledge that it is perceptions of credibility rather than objectively defined credible sources in section 2d:<br><br>~~Trustworthy~~ Sources that potentially can be perceived as credible by the general population can include public-health experts, organisations (e.g. Centers for Disease Control and Prevention) and state and local governments |
| 5. The limitations section I believe needs expanding to consider the diversity of papers examined. The reviewed studies regarded different infectious diseases and were likely subject to a broad range of socio-political and contextual influences on message acceptance. It would also be prudent to note the role of individual differences in moderating the effect of messaging strategy on message acceptance. Were individual-difference moderators identified | Thank you for this insightful comment, we have added a section in the limitations to discuss and consider the context of having such diverse papers. | We have added this paragraph to the limitations section of the discussion:<br><br>The aim of this rapid review was to synthesis lessons learnt from previous epidemics/pandemics to provide evidence-based recommendations about what characteristics create effective messaging. The focus of most studies was on determinants of intent and not behaviour which may have implications on successful enactment of target behaviours. As highlighted in theories (such as health action process approach77) intention formation is part of the process and key to planning and more work is needed to understand the translation into action. Inclusion of different infectious disease (although the messaging would be of similar behaviours) may have included different contextual influences that we could not account for when synthesising the data (e.g. different countries and different social norms or political influences). Furthermore, more work is needed to understand the |

| | | |
|---|---|---|
| in the papers reviewed? There is a danger of over-simplifying the findings from the literature, and a more critical approach throughout the review would be welcomed. | | moderating effects of individual differences on message acceptance. |
| Minor points:<br><br>6. Page 8, line 29, sentence needs revision.<br>7. Page 9, line 30, I do not follow this statement. Why does this therefore mean that credible community sources are valuable? Is this classed as an unofficial or official source? What is the media referring to in this context- do media sources include social or trusted media/news reports?<br>8. Page 9, line 43, the subheading needs revision.<br>9. Page 10, line 11, why is this surprising? Remove the word 'even' here. DONE<br>10. Page 11, line 8, how does this final statement fit with the media recommendation theme- were prompts using particular media used in the study?<br>11. Page 14, section 4a, how does the role of empathy affect the narrative vs. factual message effects?<br>12. Page 14, line 36, the reference here would support a conclusion that it is anxiety or worry driving these effects rather than social | Thank you for these points, the reviewer has provided us with insightful changes that we have addressed throughout the manuscript. | Changes are either underlined (what has been added) or with a line through (What has been removed):<br><br>6. Page 8 Line 29:<br>The papers focused mainly on Influenza A virus subtype H1N1 (n=20), Covid-19 (n=15) and Ebola (n=11), other diseases (n= 13) which have emerged at different ~~points in time~~ timepoints in the last 50 years. The timelines from initial outbreaks are highlighted in Figure 2.<br><br>7. Page 9 line 30:<br>A preprint study stated that over time preferred expert sources (e.g. government websites) are displaced by unofficial sources (e.g. social media) for information regarding epidemic/pandemics;[15] therefore, developing ties ~~credible sources~~ within the community (e.g. trusted spokeperson) can be helpful to provide accurate information ~~perceived as valuable~~. A high-quality study found that students tend to perceive information from their university (from their own communities) as more credible than the media. [16] One low-quality study found that community engagement is also important for quickly disseminating messages which are translated into different languages.[17, 18]<br><br>8. Page 9, Line 43 Subheading:<br>Tailoring helps to make the key messages applicable to an individual's situation<br><br>9. Page 10 line 11:<br>One low-quality study found that there may ~~even~~ be differences in message preferences (e.g., older adults and mothers preferred messages that emphasised the protection of others).[27]<br><br>10. Page 11, Line 8:<br>In specific situations for example, messages through the use of posters in bathrooms to increase handwashing need to not just have prompts for the behaviour but also messages about transmission as ~~Whilst another~~ a high-quality study found that prompts alone do not increase handwashing.[39] This is consistent with the Health Belief Model where cues of action can trigger behaviour but requires cognitive |

| | | |
|---|---|---|
| responsibility. The authors should make it clear that it is a different study that examines message framing around pro-social responsibility.<br>13. Page 15, section 4c, this subheading does not seem to accurately describe what is included in this section. Perhaps consider revising sections 4b and 4c to include clearer support for each recommendation.<br>14. Page 15, section 4d, this corresponds with widely accepted findings on the importance of self-efficacy in message framing. It would be helpful to integrate discussion of the social cognition models (currently found in the limitations section), in some of the sub sections of the review recommendations.<br>15. Figure 1. It is not clear how some of the notes in this diagram correspond with what has been described in the review. For example, 'relevance and relatable', and 'resilience in communities' is too vague and it is not clear why this is in the 'impact on perceptions' category. There are some typos in the diagram (e.g., 'credibility' and 'emphasis'). | | representations of perceived susceptibility and perceived barriers/costs to action.<br><br>11. Page 14, section 4a<br>We have gone back to the paper source and empathy was not measured or taken into account when comparing non-narrative to narrative messages therefore, we are unable to determine the role of empathy affecting the message effects. This is an area for further research.<br><br>12. Page 14, line 36:<br>In a high-quality systematic review, it was found that being worried (about self or family members at risk) was an important predictor of compliance with recommended preventative behaviours, such as using tissues, hand gel and washing hands.[19] The effects of worry about others at risk on compliance with preventative behaviours can potentially be amplified when combined ~~Especially when this tapped into~~ with messages about being socially responsible. A high-quality study found ~~through~~ framing messages with positive social responsibility to be useful for the public.~~as highlighted in a high-quality study.~~[64]<br><br>13. Page 15 section 4c<br>~~Language choice improves trust, transparency, and risk perception~~<br><br>Choice of language needs to be clear and appropriate to understanding the magnitude of risk<br><br>14. Page 15 section 4d:<br><br>Recommendation of increasing self-efficacy through messaging is well supported in theoretical frameworks about behaviour change and risk communication for example, the Theory of Planned Behaviour, Health Belief Model, Protection Motivation Theory, the Health Action Process Approach, COM-B model and Social Cognitive Theory. Increasing self-efficacy has positive implications on planning, intention possibly then behaviour.<br>Outlined in some of the studies, ~~P~~ people want messages about specific actions that they could take to protect themselves and their families during the epidemic/pandemic as shown in a high-quality study<br><br>15. In Figure 3:<br>Under impact on perceptions the points have been clarified and typos have been corrected:<br><br>• Relevance to own understanding and past experiences and relatable to self<br>• Increase perceived credibility of message and source |

| | | |
|---|---|---|
| | | • Understanding the magnitude of risk appropriate to stage of pandemic<br>• Understanding and knowledge of threat |
| | There were other changes that we have completed as part of the resubmission process, we have also added information about ethical approval in the methods section and we have moved our Patient and Public Involvement statement to it's own section in the methods section to align with the BMJ Open Guidelines. | |

**VERSION 2 – REVIEW**

| | |
|---|---|
| **REVIEWER** | Grimani, Aikaterini<br>University of Warwick, Warwick Business School |
| **REVIEW RETURNED** | 18-Sep-2021 |

| | |
|---|---|
| **GENERAL COMMENTS** | The author(s) followed the reviewers' and editor's comments and suggestions. After the amendments the manuscript has been improved. |

| | |
|---|---|
| **REVIEWER** | Pavey, Louisa<br>Kingston University, Department of Psychology |
| **REVIEW RETURNED** | 31-Aug-2021 |

| | |
|---|---|
| **GENERAL COMMENTS** | I have reviewed the revised manuscript and responses to reviewer comments and believe that the manuscript has been much improved. In particular, there is greater clarity of the methods used, and the limitations section has been expanded.<br><br>To note one further amendment: the number of articles for inclusion in the revised abstract does not match the main text (14 preprint articles vs. 11 preprint articles). Please correct this.<br><br>The reviewers have addressed all comments and concerns raised in my previous review. I believe that the work will make a useful contribution to the literature and be of practical significance to policy makers and public health communication experts. |

## VERSION 2 – AUTHOR RESPONSE

Thank you for pointing out the inconstancy for the minor revision, it was incorrect on the table of changes and the information on the manuscripts was correct. I apologise for the confusion. I have uploaded a table of changes with track changes to ensure that all information is correct in all documents submitted. The details highlighted by Reviewer 2 about what type of manuscripts, had been deleted in the manuscript as the changes made the abstract longer than word count limit. I have also uploaded a clean version of the table of changes for the records.