

PEER REVIEW HISTORY

BMJ Paediatrics Open publishes all reviews undertaken for accepted manuscripts. Reviewers are asked to complete a checklist review form and are provided with free text boxes to elaborate on their assessment. These free text comments are reproduced below.

ARTICLE DETAILS

TITLE (PROVISIONAL)	Parent views on the content and potential impact of respiratory tract infection surveillance information: semi-structured interviews to inform future research
AUTHORS	Kesten, Joanna; Anderson, Emma; Lane, Isabel; Hay, Alastair; Cabral, Christie

VERSION 1 - REVIEW

REVIEWER	Tonkin-Crine, Sarah University of Oxford, Nuffield Department of Primary Care Health Sciences, UK Competing interests: none
REVIEW RETURNED	18-Apr-2017

GENERAL COMMENTS	<p>This is an interesting manuscript presenting parent perceptions of novel intervention materials aimed at reducing child consultations for acute RTIs. The manuscript provides a useful example of exploratory work to inform intervention development which is much needed in this field. The manuscript is well written and clearly presented but may benefit from clarification in some parts to highlight the key findings.</p> <p>Abstract</p> <ol style="list-style-type: none"> 1. The results section would benefit from being condensed to the key findings of interest. See recommendations for discussion below. 2. See recommendations for conclusions below. <p>Background</p> <ol style="list-style-type: none"> 1. It would be useful to have more information about how the intervention materials were hypothesised to influence parents' cognitions and behaviours. The intervention materials do not appear to address all factors highlighted in lines 15-28 on page 5 so authors should specify which factors materials were targeting. This could be presented in the introduction or first section of the methods. <p>Methods</p> <ol style="list-style-type: none"> 1. Error on line 7, page 7 says up to 5 years but should be 15 years? 2. It is not clear how the "caring for coughs" information was presented to parents in interviews and whether parent were asked to comment on this information. 3. A copy of the interview guide would be useful as an appendix. 4. Why was the interview guide based on theory and why was COM-B selected? 5. Why was the framework method used for analysis? It would be useful to specify the authors of the method to distinguish it from
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	<p>framework analysis (Ritchie and Spencer).</p> <p>Results</p> <ol style="list-style-type: none"> 1. Sampling for child age and deprivation did not result in very even categories which should be mentioned in the discussion. 2. In theme 1 particularly, could you specify, where relevant, whether parents thought it was useful for themselves or useful for other parents? i.e. parents with older/more children may have found it personally less useful but recommended use for first time parents or parents with younger children. 3. Could you specify why parents thought surveillance information would be useful for them or others? 4. "Design and feedback improvements" also seems to have results which suggest there was difficulty interpreting the content of information which may link with the subtheme of "interpreting (viral) information". 5. The theme on relevance to context and needs is presenting two different things. I wonder if these should be presented separately since the latter is about increasing self-efficacy in managing children and relates to several other subthemes? 6. Page 13, line 36, how did parents think they were going to use the information if available in future? What were parents describing as "severe symptoms" and why would they only use the information in those circumstances? 7. It would be useful to have a quote to support page 14, line 38 – identify the most important symptoms when visiting the GP. 8. Use of information by GPs seems to be a key finding as parents do not seem to know what to do with the information themselves? 9. It could be made clearer what proportion of parents were theoretically happy to make a lay diagnosis and not consult and which ones were uncomfortable taking responsibility for a lay diagnosis and would consult if uncertain. It would also be interesting to note any differences in characteristics between these groups. 10. I'm not sure that the title "mixed anticipated impact" reflects participants' comments? Information on symptom duration was thought to be helpful if children followed usual trajectory but not otherwise (which would possibly indicated serious illness anyway). No other information was provided about management so parents were not guided about what they could do to care for their child. In this respect parents' views weren't mixed? 11. Which parents thought that information would not be reassuring? (page 17, line 32) Any particular characteristics? 12. The unintended consequences raised by parents from line 44, page 17 are interesting. Were parents saying this in reference to themselves or in describing how others' may react? <p>Discussion</p> <ol style="list-style-type: none"> 13. Results appear to indicate that materials may be helpful for some parents in supporting a lay diagnosis, providing information on symptom duration and providing general reassurance for "usual" illness presentation in children. It would be more informative to know to which group of parents this is most likely to refer (e.g. first time parents, parents of children under 5, etc) if possible. 14. Parents appeared to raise more examples of missing information than of existing information being useful (illness severity, preventing illness, managing illness at home). Materials did not seem to encourage increased self-efficacy in managing children's infections and this is an important omission, which may have been targeted in other parts of the intervention, but should be
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	<p>acknowledged.</p> <p>15. Authors state that materials are going on to be trialled for efficacy however it would be useful to note how materials have been amended (if at all) given this feedback from parents. The recommendations for future interventions design is very short and does not refer to theories of behaviour change at all.</p> <p>16. Purposive sampling for age and deprivation has not resulted in equal groups and should be commented on.</p> <p>17. Page 20, line 39-48 is justification for the intervention which would normally appear earlier?</p> <p>18. Page 21, line 16, any differences between first time parents and parents of young children is not explicit in the results.</p> <p>19. Page 21, line 28, are parents using the information to inform their decisions about consulting? Some of them think it may be useful for future decision making but if there is uncertainty it doesn't seem to make a difference?</p> <p>20. Page 22, line 15. Information is unlikely to override uncertainty. Given that all parents are likely to consult when uncertain it is important to stress the need to address all causes of uncertainty. Not knowing how to manage children at home seems to be key here. Line 22, beginning "this is positive" is a separate point.</p> <p>21. Parents wanted to know how to prevent illness but also how to manage illness. Information materials told them neither.</p> <p>22. As above, may be useful to refer to theories of behaviour change to identify what may be missing from intervention materials under recommendations.</p> <p>23. Conclusions could be more specific. Materials may reduce parental uncertainty in diagnosis, illness duration and provide reassurance which could reduce intention to consult in a subset of parents.</p>
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REVIEWER	Smith, Gillian Public Health England, England Competing interests: None
REVIEW RETURNED	05-Jun-2017

GENERAL COMMENTS	<p>This is a very interesting preliminary exploration of how parents (particularly mothers) would respond to the inclusion of surveillance outputs in addition to information on e.g symptom length. The value of including symptom length, and the apparent lack of mothers' understanding that no antibiotic treatment is needed for viral infections were important emerging issues from the work.</p> <p>The paper is clearly written and argued. I have little to query.</p> <p>It would be helpful to explain why only mothers are included - is this because those who had given permission to be contacted in the wider surveillance study were all mothers? If so a brief description of this would be helpful.</p> <p>The exploratory work will be of potentially wide interest - especially if the inclusion of surveillance material does impact on health care seeking behaviour. The work will also be of use for those producing real time respiratory infection surveillance outputs (especially as most of these are currently generally geared to public health/healthcare workers rather than to the general public).</p> <p>The 'surveillance information' was focussed on laboratory positivity</p>
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	<p>only and in the discussion it might be worth mentioning that there are other primary care surveillance sources which may be available at a more local level eg GP consultation data and NHS111 health care seeking behaviour.</p> <p>A challenge will be ensuring consistent outputs but at a local enough level - this might be worth mentioning in the 'next steps'.</p>
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VERSION 1 – AUTHOR RESPONSE

Reviewer: 1

Comments to the Author

This is an interesting manuscript presenting parent perceptions of novel intervention materials aimed at reducing child consultations for acute RTIs. The manuscript provides a useful example of exploratory work to inform intervention development which is much needed in this field. The manuscript is well written and clearly presented but may benefit from clarification in some parts to highlight the key findings.

Abstract

1. The results section would benefit from being condensed to the key findings of interest. See recommendations for discussion below.

Thank you, we have removed the first two sentences of the results section in the abstract as highlighted using track changes.

2. See recommendations for conclusions below.

Background

1. It would be useful to have more information about how the intervention materials were hypothesised to influence parents' cognitions and behaviours. The intervention materials do not appear to address all factors highlighted in lines 15-28 on page 5 so authors should specify which factors materials were targeting. This could be presented in the introduction or first section of the methods.

We have stated the hypothesised influence of the intervention on page 4, para 3:

“We hypothesised that online information about currently circulating viral illnesses, with symptom and home care advice, could decrease parental anxiety and encourage home management of RTIs, leading to reductions in primary care consultations [14].”

The purpose of this exploratory study was to elicit a greater understanding of the interventions potential impact and therefore to build on this early hypothesis.

Methods

1. Error on line 7, page 7 says up to 5 years but should be 15 years?

Thank you, we have corrected this error on page 6, para 2.

2. It is not clear how the “caring for coughs” information was presented to parents in interviews and whether parent were asked to comment on this information.

The “Caring for children with coughs” information was presented as hard copies of screenshots of the website. Parents were not asked to comment on this information. We have inserted the following on page 7, para 2:

“Parents were also presented with hard copies of screenshots of the ‘Caring for Children with Coughs’ website developed by researchers at the University of Bristol including members of the EEPRIS team [25]. (...) Parents were not asked to comment on this information.”

3. A copy of the interview guide would be useful as an appendix.

The interview topic guide has been added as an appendix.

The interviews also explored the acceptability of the EEPRIS feasibility study. We have therefore only included the interview topics relevant to this paper and have reported that the acceptability findings will be reported elsewhere (page 7, para 2):

“Interviews began by discussing the acceptability of the EEPRIS feasibility study (interview topics and findings to be reported separately).”

4. Why was the interview guide based on theory and why was COM-B selected?

The use of theory to inform the interview topic guide is supported by the Medical Research Council's guidance on developing and evaluating complex interventions.

The COM-B model was selected because it supports a systematic approach to intervention development beginning with consideration of key factors acting on the target behaviour (visiting the GP for child RTI) – namely capability, opportunity and motivation.

We have inserted this explanation on page 7, para 2:

“It is recommended that to increase the likelihood of effectiveness, interventions are developed using relevant theory [26]. (...) The COM-B model was chosen for this purpose as it offers a systematic approach to considering key factors acting on the behaviour of interest in this case visiting the GP for child RTI.”

5. Why was the framework method used for analysis? It would be useful to specify the authors of the method to distinguish it from framework analysis (Ritchie and Spencer).

The authors of the model are now specified at the beginning of the Analysis paragraph, together with our reason for choosing the framework method:

“Gale and colleagues framework method, a type of thematic analysis was used to analyse the data [28]. This method was chosen because by condensing and summarising the data within a framework matrix, reflections on meaningful, pertinent themes as well as connecting or divergent perspectives were formed.”

Results

We have decided to re-order the results section to improve the flow and address the feedback regarding the completeness of the themes. The order of themes is now: Perceptions of online infection surveillance information; Likelihood of using online infection surveillance information; Potential impact and usefulness of online infection surveillance information; Acceptability of the use of online infection surveillance information in consultation; Design feedback and improvements; Accessing online surveillance information.

1. Sampling for child age and deprivation did not result in very even categories which should be mentioned in the discussion.

We have included the following in the strengths and limitations section:

“A more representative sample may have responded differently to particular aspects of the intervention material. Although the sampling approach for this qualitative study did not produce a similar number of responses across the categories of child age and deprivation, the sample closely reflects the EEPRIS cohort (unpublished findings).”

2. In theme 1 particularly, could you specify, where relevant, whether parents thought it was useful for themselves or useful for other parents? i.e. parents with older/more children may have found it personally less useful but recommended use for first time parents or parents with younger children.

We have now specified that most parents thought the information was useful for them personally (page 9, para 1):

“Most parents thought information on symptom duration, locally circulating viruses and their symptoms was useful for them.”

During the interview parents were asked to imagine how they might use this information if their child has the symptoms of a RTI such as a sore throat, blocked or runny nose, sneezing and a cough (Appendix A). This may have resulted in parents focusing on their own response to the information. For clarity, we have added this to page 7, para 1:

“Parents were asked to imagine how they might use the information if their child has the symptoms of a RTI (Appendix A).”

Thank you for spotting this oversight. A small number of comments were made about the particular usefulness for first time parents or parents with younger children. We have now explicitly mentioned first time parents on page 10, para 1:

“A small number of parents commented that this information would be particularly relevant to first time parents and parents of young children, those with pre-existing immune-system conditions and new parents.”

3. Could you specify why parents thought surveillance information would be useful for them or others?

To avoid duplication, we have added ‘usefulness’ to the heading of the substantive theme “Potential impact and usefulness of online infection surveillance information” as we feel that in this section the practical use of surveillance information is explored in detail including lay diagnosis informed by the signs and symptoms of circulating viruses and consultation for and management of child illness informed by symptom duration information.

4. “Design and feedback improvements” also seems to have results which suggest there was difficulty interpreting the content of information which may link with the subtheme of “interpreting (viral) information”.

Thank you for this comment. We agree and have moved the “interpreting viral infection information” paragraph into the “Design feedback and improvements” section.

5. The theme on relevance to context and needs is presenting two different things. I wonder if these should be presented separately since the latter is about increasing self-efficacy in managing children and relates to several other subthemes?

This theme is about the perceived relevance of the information we included in the intervention. Parents highlighted both personalisation and information needs, which is why both are included here.

We agree that the point about including more specific advice on how to manage child illness is duplicated but feel that this theme is relevant to the design improvements and potential impact of the information and is therefore useful to include in both places.

6. Page 13, line 36, how did parents think they were going to use the information if available in future? What were parents describing as “severe symptoms” and why would they only use the information in those circumstances?

We decided to change “use” to “looking at” on page 10 under “Likelihood of accessing online surveillance information”. Also, we hope that by re-structuring the results section we have improved the flow and addressed the comment about how parents might use the information.

We have expanded on what parents perceived to be severe symptoms (e.g. vomiting, duration of symptoms, impact on child activities and deterioration). In these circumstances, parent concern and perceived need to seek information to guide decision making on managing child symptoms was higher than when mild symptoms were present (page 10, “Likelihood of accessing online surveillance information”):

“Roughly half of parents would not use the information if their child’s symptoms were perceived to be mild (e.g. symptoms of a common cold) but would consider using it for more severe symptoms, such as vomiting, diarrhoea and, Bronchitis, with prolonged symptom duration, impacting on the child’s activities and/or are getting worse. Unlike mild symptoms which parents felt confident managing, these symptoms were perceived to be more worrying for parents and were anticipated to be more likely to require information seeking to inform some form of action for example alleviating child symptoms or seeking medical advice.”

7. It would be useful to have a quote to support page 14, line 38 – identify the most important symptoms when visiting the GP.

We have inserted a quote to support this finding on page 15, para 2.

8. Use of information by GPs seems to be a key finding as parents do not seem to know what to do with the information themselves?

Thank you for this useful point. We have included the following on page 15, para 1:

“This may relate to the finding that a small number of parents did not know how they would use it.”

9. It could be made clearer what proportion of parents were theoretically happy to make a lay diagnosis and not consult and which ones were uncomfortable taking responsibility for a lay diagnosis

and would consult if uncertain. It would also be interesting to note any differences in characteristics between these groups.

We have provided this clarification on page 11, under 'Lay diagnosis and consulting'.

While we agree that differences in experiences, attitudes and values may be attributable to parent characteristics, this was not the focus of this exploratory qualitative study and we do not believe meaningful patterns can be attributed in such small numbers.

10. I'm not sure that the title "mixed anticipated impact" reflects participants' comments? Information on symptom duration was thought to be helpful if children followed usual trajectory but not otherwise (which would possibly indicated serious illness anyway). No other information was provided about management so parents were not guided about what they could do to care for their child. In this respect parents' views weren't mixed?

Thank you for this point. We agree and have changed the title to 'Context specific anticipated impact on management of child illness' (page 12).

11. Which parents thought that information would not be reassuring? (page 17, line 32) Any particular characteristics?

Please see previous response to point 9 regarding describing characteristics of participants in relation to the qualitative findings.

12. The unintended consequences raised by parents from line 44, page 17 are interesting. Were parents saying this in reference to themselves or in describing how others' may react?

Please see response to point 2. Parents were referring to their own concerns rather than that of other parents. We have clarified this on page 13, para 4:

"Parents felt the information could also raise their concern, for example where symptoms last longer than suggested by the symptom duration information and by heightening their awareness of circulating viruses that children could catch. The latter relates to parents' concerns about the threat posed by circulating viruses leading to a desire to protect children by limiting interactions with others."

Discussion

13. Results appear to indicate that materials may be helpful for some parents in supporting a lay diagnosis, providing information on symptom duration and providing general reassurance for “usual” illness presentation in children. It would be more informative to know to which group of parents this is most likely to refer (e.g. first time parents, parents of children under 5, etc) if possible.

Page 21, para 3 discusses the finding that first time parents and those with younger children may find the information most useful and asserts that targeting these groups may be appropriate.

14. Parents appeared to raise more examples of missing information than of existing information being useful (illness severity, preventing illness, managing illness at home). Materials did not seem to encourage increased self-efficacy in managing children's infections and this is an important omission, which may have been targeted in other parts of the intervention, but should be acknowledged.

We agree that as well as highlighting positive aspects of the information such as the symptom duration information, parents also highlighted several helpful areas of improvement. Our aim was to explore exactly this – which elements of our information intervention were useful and might help parents feel more confident about home care and consulting and which were not. These findings will inform future intervention development. We have added the following to page 22, para 1.

15. Authors state that materials are going on to be trialled for efficacy however it would be useful to note how materials have been amended (if at all) given this feedback from parents. The recommendations for future interventions design is very short and does not refer to theories of behaviour change at all.

We have summarised the key changes to the intervention material on page 20, para 1:

“In the next iteration, the graph of positivity rates has been replaced by a map of the local area on which the prevalence of common viruses is visualised, specific self-care instructions relating to viral infections is provided and the distinction between viral and bacterial infections described. Short and simple messages are used and there is repetition of key points. Finally, the information highlights that it comes from a credible academic source and was co-created with parents.”

In the same paragraph we have also expanded on the next step of this work which involves developing and testing a logic model of intervention effects and behaviour change techniques as

recommended by the COM-B model. This piece of work is ongoing and we are therefore not able to include details in this paper:

“In the next stage of the EEPRIIS study, these findings will be used to develop a comprehensive logic model of the hypothesised intervention effects and behaviour change techniques [30].”

We have also built on the ‘Recommendations for future intervention design’ paragraph in line with reviewer 2’s comments.

16. Purposive sampling for age and deprivation has not resulted in equal groups and should be commented on.

Please see earlier response to this point.

17. Page 20, line 39-48 is justification for the intervention which would normally appear earlier?

We have inserted “In line with previous research” at the start of the first sentence to emphasise that this section relates to a comparison with existing literature.

18. Page 21, line 16, any differences between first time parents and parents of young children is not explicit in the results.

The proposed relevance of the information to parents of young children appears on page 9, para 1. We have now explicitly mentioned included first time parents. Thank you for spotting this oversight.

19. Page 21, line 28, are parents using the information to inform their decisions about consulting? Some of them think it may be useful for future decision making but if there is uncertainty it doesn’t seem to make a difference?

We agree that the language in this sentence needs to be tempered, it now reads, “The suggestion that some parents may use this information as part of their consultation decision-making process...”

20. Page 22, line 15. Information is unlikely to override uncertainty. Given that all parents are likely to consult when uncertain it is important to stress the need to address all causes of uncertainty. Not knowing how to manage children at home seems to be key here. Line 22, beginning “this is positive” is a separate point.

We have added this point around addressing parent uncertainty in its totality to the ‘Recommendations for future intervention design’ section.

21. Parents wanted to know how to prevent illness but also how to manage illness. Information materials told them neither.

We feel this point has been made in this sentence in the ‘Recommendations for future intervention design’: “Advice on how to treat and manage symptoms, when to consult and how to prevent infection is wanted by parents.”

22. As above, may be useful to refer to theories of behaviour change to identify what may be missing from intervention materials under recommendations.

Thank you for your suggestion. Please see our response to point 15.

23. Conclusions could be more specific. Materials may reduce parental uncertainty in diagnosis, illness duration and provide reassurance which could reduce intention to consult in a subset of parents.

Thank you for your suggestion. We have added the following: “For some parents, the information may reduce uncertainty and provide reassurance which could influence intentions to consult.”

Reviewer: 2

Comments to the Author

This is a very interesting preliminary exploration of how parents (particularly mothers) would respond to the inclusion of surveillance outputs in addition to information on e.g symptom length. The value of including symptom length, and the apparent lack of mothers' understanding that no antibiotic treatment is needed for viral infections were important emerging issues from the work.

The paper is clearly written and argued. I have little to query.

It would be helpful to explain why only mothers are included - is this because those who had given permission to be contacted in the wider surveillance study were all mothers? If so a brief description of this would be helpful.

In the EEPRIIS cohort about 10% of those consented to interview were Dad's, however the majority of the cohort were mothers. We did not use parent gender to sample parents. This is now acknowledged in the 'Strengths and Limitations' section and para 2, page 6:

"One father was invited to participate out of a potential 27 or 9% of the EEPRIIS cohort."

"The sample was limited to mothers (we did not use parent gender as a sampling criteria), however research has shown that they are more likely to take children to consultations than fathers"

The exploratory work will be of potentially wide interest - especially if the inclusion of surveillance material does impact on health care seeking behaviour. The work will also be of use for those producing real time respiratory infection surveillance outputs (especially as most of these are currently generally geared to public health/ healthcare workers rather than to the general public).

The 'surveillance information' was focussed on laboratory positivity only and in the discussion it might be worth mentioning that there are other primary care surveillance sources which may be available at a more local level eg GP consultation data and NHS111 health care seeking behaviour.

Thank you. Yes, the intervention could also include syndromic surveillance data. We have added the following to page 23, para 4: "Future work could explore the potential use of other data sources such as syndromic/ consultation data from GP electronic health records, which could be combined with microbiological data. A key challenge will be ensuring outputs are: sufficiently sensitive (to the rapidly changing epidemiology of infectious diseases); precise (based on large enough data sets) and specific (relevant to that geographical area)."

A challenge will be ensuring consistent outputs but at a local enough level - this might be worth mentioning in the 'next steps'.

We agree and have added the above in response.