Author’s response to reviews

Title: Randomised controlled trial of an intervention to improve parental knowledge and management practices of fever

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Author’s response to reviews:

TRAMS (Trials Research and Methodologies Group),
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Dr Darren Byrne,
BMC Pediatrics.

22 September 2019

Dear Dr Byrne,
Thank you for sending our study, “Randomised controlled trial of an intervention to improve parental knowledge and management practices of fever” out for review. The reviewers gave thorough consideration to the paper once again and their comments have improved the paper. We have made the requested major revisions to the paper by tracked changes. We have also responded to the reviewer’s comments and address each of them below. In addition, we made other minor editing changes by tracked changes, e.g. removing extra full-stops or brackets that had been included in the previous version. We trust that this answers all queries. If we are required to make further changes, we are happy to do so.

If you have any further queries, please do not hesitate to contact me.
Response to Reviewers

Reviewer 1: R. Oostenbrink
The manuscript has substantially been improved, more clear message has been put in better context, discussion is more focussed. I miss the discussion on not to include the T0 measurement and its potential effects on the results.

There are some minor typo's that need to be corrected.

Query 1
For understanding the statistic analysis, I would suggest the authors better explain how they did perform the logistic regression. what was the outcome (knowledge on T1?), but how did they then compare outcome at T2 (difference between T1 and T2 or was T1 included as a variable in the model to estimate T2?
Response to Query 1
We thank the reviewer for this comment. We’re not exactly sure what is mean above but this is our interpretation of it. It looks like the main issues is that we described the primary outcome as “increased knowledge of correct definition of fever”, whereas the actual primary outcome was whether they answered the question correctly or not (Yes/No). The outcome is the dependent variable in the analysis. We confused the reviewer by our wording of the primary outcome as the change, i.e., “increased knowledge”, in the percentage correctly endorsing them.

We have used tracked changes in the manuscript in response to the reviewer’s comment. We have modified the definition of the primary outcome in the “Study Outcomes” section, changing it from “The primary outcome was increased knowledge of the correct definition of fever” to “The primary outcome was the correct definition of fever. The primary outcome was increased knowledge of the correct definition of fever (higher than ≥38°C as the temperature at which a fever is said to be present)”.

Query 2
Next, I advice the editor to judge the need for external statistical evaluation, given the discrepancy between both reviewers and the opinion of the authors.
Response to Query 2
The editor sought external evaluation.

Query 3
Line 13-17 page 11: discrepancies are an artefact of the data: this should be: given that the groups are randomised, it does not affect the result/conclusions of our study (Query 3a). However, it may affect generalizability of the results. In that sense, testing for associations
between baseline characteristics of the groups on the effect (or correct for it) may be helpful (Query 3b).

Response to Query 3a
Thank you to reviewer for this comment. We have removed the statement “the discrepancies are an artefact of the data” and replaced it with the reviewer’s suggestion above. The line in the text now reads, “Parents were randomised using sequentially numbered opaque sealed envelopes so given that the groups were randomised, it does not affect the results or conclusions of our study”.

Response to Query 3b
We didn’t use baseline tests of differences in the covariates, as it is not recommended by CONSORT but they wouldn’t have any bearing on generalizability in any event. Generalizability is down to whether there are factors that modify the effect of the intervention, and in turn whether these factors (which may not even exist) are distributed differently in your sample from a population of interest.

Reviewer 2: Statistical Reviewer
Requested Revisions

Query 1
ABSTRACT
Background: "We have previously ……….. " is not a good start for the background information.
Response to Query 1
Thank you to the reviewer for this comment. We have modified both the abstract and the background sections and removed “we have previously…” and replaced it with “We know…”

Query 2
Methods: A convenience sample was purposively selected. This seems to be a error; the sample size was scientifically determined as described in the main methods section. The methods section didn't mention the endpoint or primary outcome measure. T1 and T2 are coming for the first time and so they should be defined. Sample size per group should also be mentioned.
Response to Query 2
Thank you to the reviewer for this helpful comment. Yes, we agree, this is not a convenience sample. What we had intended to convey was that we recruited as many parents as we could at the various locations. We thought about replacing the word convenience with non-random, as most clinical trials are of non-random samples – they are the patients that appear for treatment and there is nothing random about them. However, given the reviewer’s comments, we thought it best to exclude both words, and we have removed this from the abstract and replaced it with the following line “Parents presenting at purposively selected healthcare facilities who had a child aged ≤five years of age were invited to participate”. We trust this complies with what the reviewer had in mind.
We have also included the primary outcome measure and we have defined T1 and T2. This part of the abstract now reads as “Parents in the intervention arm were asked to read an information leaflet on fever and management of fever in children, complete a short questionnaire at Time 1 (T1) and again two weeks after randomisation at Time 2 (T2). Parents in the control arm did not receive the fever information leaflet but were asked to complete the same short questionnaire as
the intervention arm at T1 and again two weeks after randomisation, T2. The primary outcome was the correct definition of fever (higher than ≥38°C as the temperature at which a fever is said to be present).”

Query 3
Results: The findings were not well reported as it should be for an RCT. Comparisons were mentioned without p-values.
Response to Query 3
Thank you to the reviewer for this helpful comment. We have now amended the results section in the abstract to better reflect the findings. We have included the logistic regression results with both 95% CIs and p-values. The Results section now reads as follows:
“A total of 100 parents participated in the study at T1. A greater proportion of the intervention group (76%) than the control group (28%) selected the correct temperature (≥38°C) at T1. 76% of the intervention arm correctly identified “higher than ≥38°C” as the temperature at which a fever is said to be present compared to 28% of the control arm. After two weeks, there was an increase of 6% of parents in the intervention arm (increase to 82.4%) who gave the correct temperature compared to just a 2.8% increase in the control arm (increase to 30.8%). Univariate logistic regression showed that parents in the intervention arm were significantly more likely to give the correct answer at both time-points (T1: OR 8.1; CI 95% 3.3-19.9: p<0.01; T2: OR 10.5; CI 95% 3.4-32.0: p<0.01)”.

Query 4
Conclusion: Fever knowledge, concerns and anxiety appeared for the first time in the conclusion and there are no results to support them in the results section of the abstract.
Response to Query 4
Thank you to the review for this comment. We changed the results section and believe that the results support the conclusion of fever knowledge improvement as there was an increase between T1 and T2 of parents correctly selecting the correct temperature at which a fever is present. However, we agree that the inclusion of concerns and anxiety is overstating the findings. We are making an assumption here. We have now amended the conclusion section to read as follows:
“Our RCT of this simple educational intervention has been shown to improve parental understanding of fever knowledge and correct management strategies. Education interventions providing simple, clear information is a key step to decreasing parental mismanagement of fever and febrile illness in children”.

MAIN TEXT
Query 5
Sample size was described here but a convenience sample was mentioned in the abstract. A multi center trial was mentioned therefore sample size per center may be important. Authors need to report how quality control was assessed and standardization of instruments considering that it was a multi center trial. Authors reported that instruments contained information on pharmaceutical products, concerns, attitudes and beliefs but these results cannot be found in the results section. Also parental behaviors and expectations were mentioned. On data treatment, it is important to mention the dependent variable in the univariate logistic regression. However, the analysis would have been better if a GEE was conducted. This would have taken into
consideration the two data points. Flow diagram is good but the subtitle of consort 2010 may be deleted.

Response to Query 5
Thank you to the reviewer for these comments on the main text which are helpful to clarify the study. We have now amended the abstract and removed the reference to a convenience sample. The reference to the multi-centre trial is valid, as the parents were recruited from a number of sites. As the total sample size is 100, it wouldn’t be feasible to describe the results in terms of each recruitment site as the study was now powered to discriminate between sites. In relation to quality control, we stated that one researcher conducted the data collection. We have expanded on this in the main text to illustrate that this eliminates observer bias. In terms of the standardisation of instruments, we utilised one instrument, i.e., a questionnaire, at each of the sites. We are unsure what additional explanations to provide here but are happy to be guided by the reviewer if more information is provided. We have already provided much information on the design of the intervention tool, i.e., the information leaflet, including the fact that it was approved by the National Adult Literacy Agency, ensuring that the language used was simple English and not technical.

We described the instrument and provided a copy of it in Appendix 2 and the fact that it contained information on pharmaceutical products, concerns, attitudes and beliefs. However, the primary aim of this study was to examine the effectiveness of an information leaflet at increasing parental knowledge of fever, specifically temperature definition, therefore we did not report on all of the data we collected in the questionnaire.

Regarding data treatment, reviewer 1 also questioned the primary outcome/dependant variable. We have amended the manuscript throughout to make clear that the primary outcome, and thus the dependent variable in the logistic regression is the correct definition of fever (higher than $\geq 38^\circ C$ as the temperature at which a fever is said to be present). We have removed the subtitle “Consort 2010” from the flow diagram.

Query 6
Results: Table 1: No need to show mean, median and range. Mean is required with SD if data is normal. Otherwise median is required. On nationality, Is it not sufficient to just categorize as Irish and non Irish?
Response to Query 6
Thank you to the reviewer for this comment. We are involved in much trial methodological research and the conduct of meta-analyses. While the reviewer may have a preference to reduce the amount of data shown, we were thinking about any future meta-analyses in which it is very useful to have more complete descriptions. As the demographic in Ireland has changed considerably in the last decade, we chose to expand beyond Irish and non-Irish. But if the reviewer would prefer, we can amend this table. We felt it doesn’t take away from the study and its findings so have left the table as was.

Query 7
On primary outcome analysis. It is not desirable to start a sentence with a figure. First sentence : 76% versus 28%. May need to give a p value for this comparison.
Response to Query 7
We have amended the sentence so it does not begin with a figure. The primary outcome analysis was between T1 and T2, not between the intervention and control arms, so we did not present a p-value here but rather a descriptive statistic.

Query 8
Table 2: p values are necessary too.
Response to Query 8
Thank you to the reviewer for this comment. As above, the analysis was between T1 and T2, not between the intervention and control arms, so we did not present a p-value here but rather a descriptive statistic. However, we included a p-value for the logistic regression as appropriate.

Query 9
Under study outcomes, primary outcome was given as increased knowledge of correct definition of fever but in the results, under primary outcome analysis, … there was no association between primary outcome, correct definition of fever, ……. and other socio demographic factors. These sentences need to be reconciled.

Response to Query 9
Thank you to the reviewer for this comment and we can see what the issue is. We have reconciled these sentences. Reviewer 1 also pointed out the issue with the primary outcome. I have copied here the response made to reviewer 1.

It looks like the main issues is that we described the primary outcome as “increased knowledge of correct definition of fever”, whereas the actual primary outcome was whether they answered the question correctly or not (Yes/No). The outcome is the dependent variable in the analysis. We confused the reviewer by our wording of the primary outcome as the change, i.e., “increased knowledge”, in the percentage correctly endorsing them.

We have used tracked changes in the manuscript in response to the reviewer’s comment. We have modified the definition of the primary outcome in the “Study Outcomes” section, changing it from “The primary outcome was increased knowledge of the correct definition of fever” to “The primary outcome was the correct definition of fever The primary outcome was increased knowledge of the correct definition of fever (higher than ≥38°C as the temperature at which a fever is said to be present)”.

Query 10
Secondary outcome analysis. It is not desirable to start a section with a table.
Response to Query 10
We have now modified the section so we don’t begin it with a table. We also rearranged other subsections where this was the case.

Query 11
Table 3: Significant differences were mentioned but no p values were reported.
Response to Query 11
Thank you to the reviewer for this comment. We have removed any mention of the word significant through the manuscript except when it refers to statistical significance. We have instead used synonyms such as substantial or noteworthy, etc.

Query 12
Table 4: The interpretation: "learning between the two time points is obvious for both arms……" sounds like a discussion. Authors should take to the discussion.
Response to Query 12
Thank you to the reviewer for this helpful comment. We have now removed this line from the results section.