Author's response to reviews

Title: Q fever in the Netherlands: public perceptions and behavioral responses in three different epidemiological regions: a follow-up study

Authors:

Marloes Buls (m.bults@rotterdam.nl)
Desirée JMA Beaujean (desiree.beaujean@rivm.nl)
Clementine J Wijkmans (c.wijkmans@ggdhvbnl)
Jan Hendrik Richardus (j.richardus@erasmusmc.nl)
Hélène Voeten (h.voeten@rotterdam.nl)

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Author's response to reviews: see over
Rotterdam, February 2014.

Dear dr. Dalumpines,

We received the reviewer report on our revised paper titled: “Q fever in the Netherlands: perceptions and behavioural responses in three different epidemiological regions: a follow-up study”. We are very happy with the compliment that the paper has greatly improved from the last version because of additional analyses that helped explain the trends in the data.

The reviewer only had a few comments, which we are happy to address. In this letter we give a point-by-point response to the comments of the reviewer. We uploaded the revised paper conforms to the journal style and including changes as a result of the reviewer comments.

We hope that our paper is now suitable for publication in *BMC Public Health*.

Yours sincerely,

On behalf of all authors

Marloes Bults (corresponding author).
Comment reviewer

Major Compulsory Revisions

1. The correlations between variables were assessed through Pearson’s r – this statistics can only be computed for variables measured on interval or ratio scales. Only one variable in the analysis (“Knowledge”) fulfills this requirement. The other cognitive variables that are measured on Likert scales may be included in Pearson’s correlation even though technically these are ordinal scales (it is accepted in literature in cases where the scale is at least 5 point and there is sufficient number of cases). However, the socio-economic variables absolutely cannot be included in such analysis, especially those measured on nominal scales – even though one may denote gender as 0 or 1 or ethnicity as 1 or 2 it does not make sense to correlate such a score with anything! Similarly, the ordinal variables here (education – low/intermediate/high, number of children – 1/more than 1 or contact with disease – yes/no) should not be included. To obtain a full correlation matrix the interval variables should be treated as categorical ones and appropriate statistics should be used (Spearman’s Rho, excluding the nominal variables). However, since the ordinal variables do not have many categories and there are some nominal ones, Chi2 tests would be even more appropriate to assess the relations between variables.

Reply: As suggested by the reviewer, in the revised version of our paper we now use Spearman’s Rho for calculating correlations between ordinal vs ordinal variables (perceived severity, susceptibility, chance, anxiety, efficacy, self-efficacy, and intention), and between ordinal vs interval variables (i.e. knowledge and number of preventive behaviours taken). Cramers V is based on Pearson’s Chi2 test and used to measure association between two nominal variables or between nominal and ordinal/interval variables, giving a value between 0 and +1. We used Cramers V for calculating correlation regarding the socio-demographic variables (age, gender, education, ethnicity, employment status, marital status, children in household, and contact with the disease), i.e. for nominal vs nominal/ordinal/interval variables.

In the method section we now describe that: “We computed the unadjusted bivariate correlations between the study variables using Cramers V (for nominal vs. nominal/ordinal/interval variables) and Spearman’s Rho (for ordinal/interval vs. ordinal/interval variables).”

Minor Essential Revisions

2. The description of those correlations that are properly computed (Likert scales and knowledge) is misleading. Authors report many “highly correlated” variables while in the table there is only one strong correlation (intention and perceived self-efficacy) which is estimated at a stunning .79 and notably is not described in the text (!). The authors seem to confuse high statistical significance of correlations with the strength of the relation – majority of the correlations described are below .1 (less than 1% of variance explained) and should not even
be reported. There are a couple medium strength correlations (over .3) and a few weak correlations (over .1) that are worth mentioning.

**Reply:** In the revised version we now describe the variables with moderate correlation (between 0.3 and 0.5) and high correlation (>0.5), as follow:

“Table 2 provides the unadjusted bivariate correlations between the study variables. A couple of variables had moderate correlation values (between 0.3 and 0.5). Respondents with higher levels of perceived severity, susceptibility and chance also felt more anxious. A moderate correlation was also found between perceived susceptibility and chance, between perceived efficacy and self-efficacy/intention, and between perceived anxiety and preventive behaviour. A high correlation (0.78; p<0.001) was found between self-efficacy and intention.”

3. The model describing the ability to predict preventive behavior is a bit confusing. Such a model (with all the variables included in this analysis) constructed from data from a single run of the survey would explain what are the general indicators of proper preventive behaviors (i.e. how can we find the people that are behaving as advised knowing only their gender, level of knowledge etc.). In this case – with the availability of data from the same respondents from several years – the model could explain what variables predict better behavior in the future – i.e. which variables should public policy target at any given moment to improve preventive behavior in the following years. In this case it does not make much sense to include gender or age as predictors in the model because they are not amenable to controlled changes… (i.e. it is hard to imagine that the policy would be to wait until one reaches the age of 50).

**Reply:** As result of the multivariate regression analyses, we found that being female and older aged (>50 years) were significant socio-demographic predictors of taking preventive measures. In many other studies demographic variables (i.e. gender, age, education etc.) are included in the regression analyses to identify predictors of preventive behaviour. Although these variables are not modifiable, it provides interesting information. As also described in other studies, females and older people are more willing to take preventive measures [1,2]. This provides useful information and could be taking into account when preparing communication campaigns.

**Discretionary Revisions**

4. Looking closer at the correlations matrix (such as it is…) it is notable that the higher the education the higher the knowledge of the disease. However, what is really surprising is that there is a negative relation between education and every other cognitive variable. This is a finding that might be worth mentioning in the text.

**Reply:** In the revised result section we now describe that: “Regarding the socio-demographic variables, for example, higher levels of perceived susceptibility, chance, anxiety and intention were observed among the lower educated”.
5. Similarly, it is interesting that intention to take preventive measures is strongly related to perceived self-efficacy and not so much to perceived susceptibility, severity or anxiety. This is very much in agreement with social marketing research on AIDS that shows that threatening messages without implied efficacy lead to negative attitudes such as reactance while those accompanied by high-efficacy encourage positive behavioral change (e.g. Witte & Allen, 2000).

Reply: In the revised discussion we now describe that: “We found a strong correlation between self-efficacy and intention to take preventive measures against Q fever. This is very much in agreement with other studies, that describe that threatening information only leads to preventive behaviour if efficacy beliefs are also high [3,4].”

6. In the discussion section I would advise the authors to be more careful when describing the relatively low levels of perceived susceptibility as “remarkable”, “underestimated”, etc. With the numbers that the authors have provided in this version it seems that even in the high incidence region, in the year of the biggest outbreak only 0,0007 (0,07%) of the region’s population were diagnosed with Q fever. At the same time, the survey shows (as the authors mention earlier in the text) that around 15% of the respondents in this region felt susceptible.


Reply: In the revised discussion section, the relatively low levels of perceived susceptibility are described more carefully, as follow: “The perceived vulnerability and perceived anxiety were rather low, even in the high incidence region, during the peak of the outbreak. Other studies describe this finding as an “optimistic bias”, which could have an adverse effect on risk perception and public compliance [27,34,35]. It is important for the public to have an appropriate level of perceived vulnerability, because those that perceive themselves at risk are more likely to comply with government-advised preventive measures [16,18,36].”

REFERENCES
