Author's response to reviews

Title: Parental compliance-an emerging problem in Liverpool Community Child Health Surveys 1991-2006

Authors:

Gibby Koshy (G.Koshy@liverpool.ac.uk)
Bernard J Brabin (b.j.brabin@liverpool.ac.uk)

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Author's response to reviews: see over
Dear Editor,

We are submitting the revised version of the manuscript ‘Parental compliance an emerging problem in Liverpool Community Child Health Surveys 1991-2006’ after modifications based on the changes suggested by the reviewers. Parental questionnaire compliance is a major influencing factor for school based epidemiological surveys and high compliance is difficult to achieve. The present analysis aimed to describe how response rates to specific questions varied over time in relation to socio-economic status and demographic characteristics. This paper emphasises the need for considering response representativeness rather than response rate in checking validity of a study. We hope this area of research would be of interest to readers of the BMC Medical Research Methodology and that the revised paper is acceptable for publication.

Yours sincerely,

Dr Gibby Koshy

Please note that all the changes and modifications are highlighted in red in the text of the uploaded revised article as well as in the responses to the comments mentioned below.

Response to reviewers comments

Reviewer 1

1. There is lack focus on the scientific analysis of the problem. In general, the background, methods and partially results sections of the article describe the Respiratory Health Surveys in Liverpool, but not the problem of low response rate of study population in epidemiological studies, which is being expected from the title and aims of the article. For instance, in the background section it was expected the rationale for the study, some references to other similar studies, the novelty of the presented research; in the methods section specific methods and arguments for them should be presented.

Response

Reference studies reporting low response rates have been added to the background section and are included in the discussion. We have clarified the rationale for the study and the methodological approach using socio-economic status to assess responders and non-responders to specific questions. The text added is given below.

In background

The surveys provide a unique opportunity to assess parental participant compliance in the same survey schools over a 15 year period. Decline in response rates to general population surveys have been demonstrated over recent decades [15], and with even steeper declines seen over recent years[16,17,18,19]. Insight into participant characteristics which modify such study participation is essential in order to facilitate improving questionnaire response rates, as well as for establishing the validity of survey findings.
Parental compliance fell sequentially in the consecutive Merseyside surveys over the fifteen year period, and the present analysis aimed to describe how response rates to specific questions varied over time and how they related to socioeconomic status and demographic characteristics of parents of children attending these primary schools.

In Methods

It was not possible to validate parental responses to health parameters with general practice medical records.

Mean Townsend scores were estimated for participants of each survey and separately for responders and non-responders to specific key questions. These questions were on child health status, breast feeding, parental employment, parental and childhood asthma diagnosed by a doctor, household smoking, dampness in the home, childhood wheeze and excess cough.

In discussion

Response rates to general population surveys have been in decline over recent decades with compliance ranging from 30% to 70% [15,16,17,18,19,24,25,26,28], and the much lower compliance in the 2006 Merseyside survey was consistent with this pattern. This was a major concern, as marked prevalence changes in the survey population were concurrently observed for both childhood and parental asthma [3], and for childhood obesity [5]. The response rates in these school surveys are critical for assessing the validity of the study findings. Response representativeness is more important than the actual response rate in this type of survey [27]. A low response rate of 30% has been proposed as acceptable for patient satisfaction surveys, providing the sample is representative [28]. Supplemental analysis is helpful to confirm that respondents are in fact representative of the population [29]. Ideally analysis of representativeness in relation to non-response bias should compare data from responders who participated in the survey, with non responders who didnot participate in order to measure the potential bias resulting from low response rates [30]. In the present survey this was not possible, and an alternative approach of comparing socio-economic characteristics of responders and non-responders to specific questions was adopted.

Without information on the household characteristics of parents who did not return the questionnaires, it is not possible to determine if these comprised households with different socio-economic profiles. Non-responders have often been shown to differ from responders in terms of a number of socio-demographic and economic variables which are linked to lifestyles, attitudes and beliefs [24, 31]. The pattern of non-response bias is difficult to assess because characteristics of those who are contacted, but refuse to participate, will not be available [32]. There were no mean differences in socio-economic deprivation indices between respondents across the four surveys. This population was predominantly Caucasian (>94%) [21] throughout these survey years, and there were no major shifts in ethnic composition, indicating there were no substantial ethnic demographic changes.

2. The results and the discussion sections use simple descriptive analysis that sometimes seems a little bit trivial. Some additional survey of non-respondents aimed to get information about reasons of non-compliance would be very
important for the study in its field of research.

Response

Inclusion of additional survey of non-respondents for reasons of non-compliance was not possible and was not covered by our ethical committee.

The article has been verified and checked for mistakes or missing labels on figures.

3 The Methods section must be oriented to study aims.

Response

The methods section has been modified with orientation to study aims as suggested.

Mean Townsend scores were estimated for participants of each survey and separately for responders and non-responders to specific key questions. These questions were on child health status, breast feeding, parental employment, parental and childhood asthma diagnosed by a doctor, household smoking, dampness in the home, childhood wheeze and excess cough.

4 Table 1 and its description must be removed to the Methods section.

Response

Table 1 and its description have been removed from the Results section and included in the Methods section.

5 The Discussion section must be supplemented by references from other studies in its field.

Response

The discussion has been supplemented by references. In particular we have included some recent references highlighting the importance of non response rates and validity of study.

Response rates to general population surveys have been in decline over recent decades with compliance ranging from 30% to 70% [15,16,17,18,19,24,25,26,28], and the much lower compliance in the 2006 Merseyside survey was consistent with this pattern.

6 These are recommendations for improvement which the author can choose to ignore. For example clarifications, data that would be useful but not essential.

1. Is it correct definition of Body Mass Index? A relevant answer to this question may be missing because this indicator is not related with the study goal and description of this indicator must be removed.
Response

Data that has been useful but not essential has been removed as suggested. The paragraph on body mass index and calculation has been removed from the second last paragraph of discussion.

Reviewer 2

1 Is the question posed by the authors well defined?

This is an interesting paper and very important to discuss the reliability of data from surveys. How can the reliability of survey data from dwindling response rates be corrected or taken into account is a constant worry. This is especially important if public health policy, interventions and funding are to be based on these estimates.

Response

The issue of dwindling response rates has been addressed in 3rd and 4th paragraphs of Discussion.

Response rates to general population surveys have been in decline over recent decades with compliance ranging from 30% to 70% [15,16,17,18,19,24,25,26,28], and the much lower compliance in the 2006 Merseyside survey was consistent with this pattern. This was a major concern, as marked prevalence changes in the survey population were concurrently observed for both childhood and parental asthma [3], and for childhood obesity [5]. The response rates in these school surveys are critical for assessing the validity of the study findings. Response representativeness is more important than the actual response rate in this type of survey [27]. A low response rate of 30% has been proposed as acceptable for patient satisfaction surveys, providing the sample is representative [28]. Supplemental analysis is helpful to confirm that respondents are in fact representative of the population [29]. Ideally analysis of representativeness in relation to non-response bias should compare data from responders who participated in the survey, with non responders who didnot participate in order to measure the potential bias resulting from low response rates [30]. In the present survey this was not possible, and an alternative approach of comparing socio-economic characteristics of responders and non-responders to specific questions was adopted.

Without information on the household characteristics of parents who did not return the questionnaires, it is not possible to determine if these comprised households with different socio-economic profiles. Non-responders have often been shown to differ from responders in terms of a number of socio-demographic and economic variables which are linked to lifestyles, attitudes and beliefs [24, 31]. The pattern of non-response bias is difficult to assess because characteristics of those who are contacted, but refuse to participate, will not be available [32]. There were no mean differences in socio-economic deprivation indices between respondents across the four surveys. This population was predominantly Caucasian
(>94%) [21] throughout these survey years, and there were no major shifts in ethnic composition, indicating there were no substantial ethnic demographic changes.

2. Are the methods appropriate and well described?

Though there is a lot of information in the methods section, the actual details were gleaned from both reading the results and discussion e.g. explanation of the Townsend score and the rationale behind its use and any problems associated with its use. The use of the Townsend score could be the reason behind the main conclusion. Much more detail regarding the analyses, assumptions and stats used would have been good.

Response

Explanation of Townsend score and rationale behind its use has been added. The Methods section has been modified with the addition of more detail regarding the analysis, assumptions and statistics.

Data for the 1991, 1993 and 1998 surveys were screened for outliers, cross –checked with the original questionnaires, and non-biological values were omitted.

It was not possible to validate parental responses to health parameters with general practice medical records.

Data analysis and statistical methods

The analysis assumes that the population is representative of a single Caucasian ethnic group and that the denominator school populations represented the same geographic catchment areas for the 15 year survey period. The primary hypothesis examined whether question compliance was related to changes in socio-economic status.

Statistical tests were two tailed and p<0.005 was considered significant. Mean Townsend scores were estimated for participants of each survey and separately for responders and non-responders to specific key questions. These questions were on child health status, breast feeding, parental employment, parental and childhood asthma diagnosed by a doctor, household smoking, dampness in the home, childhood wheeze and excess cough.

The methodological characteristics of the cross-sectional surveys are summarised in table 1. In the 2006 survey five schools from Wallasey were again included to allow better representation in comparison with the 1991 and 1993 surveys. Other than this sampling difference the methodologies used across the four surveys were identical except for the inclusion of a small number of additional questions on parental education, ADHD, alcohol use, and smoking history in the 1998 and 2006 surveys. The proportion of mothers, or fathers, who completed the questionnaires did not change, although the percentage of questionnaires jointly completed by both parents fell from 15.8% in 1991, to 5.4% in 2006, (p<0.001).
3. Are the data sound?

The data would appear to be sound but how was the data cleaned, outliers identified, data validated? Was the use of MIMAS validated in any way, how and why were the hypothesis tests decided, how was temporality assessed to have influenced the findings?

Response

Further information on how the data was cleaned, identification of outliers and data validation has been added. MIMAS software has been used in the previous respiratory health surveys, the results for which have been published in peer reviewed journals and the hypothesis tested has been added.

Data for the 1991, 1993 and 1998 surveys were screened for outliers which were cross – checked with the original questionnaires and non-biological values were omitted.

The primary hypothesis examined whether question compliance was related to changes in socio-economic status. This is stated in the section in the methods under data analysis.

It was not possible to validate parental responses to health parameters with general practice medical records.

4. Does the manuscript adhere to the relevant standards for reporting and data deposition?

I would suggest that the manuscript with some modification would adhere to relevant standards including correcting typos and sentence structure to read more clearly. The authors may find that multi-level modelling may help to explain any associations found and could aid in the paper's conclusions to take into account the changes over time.

Response

The manuscript has been verified and checked for any typographical mistakes with some change in sentence structure.

5. Are the discussion and conclusions well balanced and adequately supported by the data?

Much of the discussion is a summary of the results and I would have expected much more critique of the work in line with the published literature to try to explain the observations and results. I am uncertain that the analyses are sufficiently complex to adequately explain the changes over time to come to the conclusions reached. Also whether the study question has been adequately
answered. Non-responder bias can be measured through a variety of different methodologies which were not explored.

Response

The different methods for measuring non-response bias and the reasons for not including them in this analysis have been added.

Record linkage to other data sources would be an alternative method to obtain information on non-respondents [30], but ethical approval for this was not available for these surveys.

6. Are limitations of the work clearly stated?

Response

A separate paragraph on limitations has been included after discussion.

As characteristics of questionnaire non-respondents were not available it was not possible to have a comparative group of parents who refused to participate. Record linkage to other data sources would be an alternative method to obtain information on non-respondents [30], but ethical approval for this was not available for these surveys.

Without information on the household characteristics of parents who did not return the questionnaires, it is not possible to determine if these comprised households with different socio-economic profiles. Non-responders have often been shown to differ from responders in terms of a number of socio-demographic and economic variables which are linked to lifestyles, attitudes and beliefs [24, 31]. The pattern of non-response bias is difficult to assess because characteristics of those who are contacted, but refuse to participate will not be available [32].

7. Do the authors clearly acknowledge any work upon which they are building, both published and unpublished?

There are references to the literature but the discussion could have done with more text on the differences and similarities with the published literature in this field.

Response

This is clearly acknowledged through inclusion of relevant references in its text and an acknowledgement statement is provided.

Additional text on differences and similarities with published literature has been added as suggested.
9. Is the writing acceptable?

This is a very important subject as population health scientists try to make sense of the reliability from studies with poor response rates. However, the manuscript could be aided by better phrasing of key sentences including the last line of the background so ensure the readership is aware of what questions are being asked i.e. if the objective was to ascertain the causes of dropping response rates from 1991-2006 then more emphasis should have been placed on this throughout the manuscript. This should include full expansion and/or explaining all abbreviations and acronyms before using them and better referencing.

Response

The last line of the background has been modified as suggested and with more emphasis on decreasing response rates.

‘Decline in response rates to general population surveys have been demonstrated over recent decades [15], and with even steeper declines seen over recent years [16,17,18,19]. Insight into participant characteristics which modify such study participation is essential in order to facilitate improving questionnaire response rates, as well as for establishing the validity of survey findings.’

‘Parental compliance fell sequentially in the consecutive Merseyside surveys over the fifteen year period, and the present analysis aimed to describe how response rates to specific questions varied over time and how they related to socioeconomic status and demographic characteristics of parents of children attending these primary schools.’

Please also see response to comment 1 by Reviewer 2.

All abbreviations and acronyms have been expanded as suggested (ADHD : Attention Deficit Hyperactivity Disorder, SPSS: Statistical Package for the Social Sciences, UK: United Kingdom)

Editorial request

Please clarify whether your study required approval from the NRES in order to analyze the data from the Liverpool surveys.

Response

This study has approval from NHS Ethical Committee, Royal Liverpool Childrens Hospital, AlderHey and also from the LSTM Ethical Committee.