Author's response to reviews

Title: UK population norms for the modified dental anxiety scale with percentile calculator: Adult Dental Health Survey 2009 results

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Author's response to reviews: see over
Dear Editor

Please see our responses to the referee reports which we list point-by-point for each referee in numerical order.

Referee #1: Trilby Coolidge

We thank this referee for the detailed reading of our manuscript and identifying a number of important issues that require clarification. The referee has assisted us in making a better paper. We are pleased that the manuscript is generally welcomed.

Major Compulsory Revisions

1. The sample is drawn by the UK Government Statistical Agencies. A large technical team of expert survey practitioners devised the sampling frame (from the Office of National Statistics, the National Centre for Social Research, NHS Information Centre, the Northern Ireland Statistics Research Agency and a team of dental experts from Universities of Birmingham, Cardiff, Dundee, Newcastle and University College London) to enable representative samples to be collected in all three countries (England, Wales and Northern Ireland) and by Strategic Health Authority (SHA, 10 in England, 1 in Wales, while 750 addresses – 15 Primary Sampling Units were sampled in Northern Ireland). Within each PSU two neighbouring postcode sectors were sampled to reduce the clustering and hence the design effect was minimised. We used the weighted data set that was issued by the NHS Information Centre. The Foundation Report: Adult Dental Health Survey 2009 (Technical Information) Authors: O’Sullivan I, Lader D, Beavan-Seymour C, Chenery V, Fuller E, Sadler K. Editor: O’Sullivan I. Responsible Statistician: Phil Cooke, NHS Information Centre, Dental and Eye Care Team; Version 1.0. Date of Publication: 24th March 2011. A two stage weighting approach was adopted which ensured that the 1,150 addresses were sampled in each English SHA and in Wales, and a further 750 in Northern Ireland. As a consequence of the aim to achieve similar sample size samples at the SHA level is the reason that differential sampling rates were utilized in the SHAs, Wales and Northern Ireland. A survey weight had to be employed to compensate for these differential rates. As well as this weighting to address the sample design deficiencies, weighting was also employed to reduce bias attributed to non-response. Unfortunately, minimal information is available about non-responding households however geographic information associated with non-responding households is available from the 2001 Census. This Census categorises each PSU based upon key characteristics including typical household type, social-economic status, typical ethnicity etc. Hence household non-response was based on the area a household was in. Details of this are contained in the Technical Report [1]. In addition to reassure the reader that the ADHS sample was reflective of the total population we compared the proportions of the ADHS sample with the Census 2007 for the UK for the comparable age groups 25-54 years, 55-64 years and 65 years and over. The difference in proportions was 0.05, 0.02 and 0.03 respectively which confirmed that the ADHS sample was a close approximation to the UK population.

2. The ADHS consisted of two complimentary data acquisition procedures, namely a clinical examination as well as a formal structured questionnaire presented through computer assisted display. Hence the participants signed up to the study gave detailed background and socio-dental indicators as well as the dental clinical exam. The survey participants were expected to volunteer some personal effort. It is likely that some refusers were not prepared to participate due to the possible burden. The refusal rate...
therefore may have compromised somewhat the survey representativeness and we mention this in the discussion.

3 The target level of recruitment was determined by obtaining a small standard error. The survey target gave the most substantial sample of all the 10 yearly surveys from 1968. This is the 5th survey in the series.

4 Table 1 presents the mean dental anxiety levels across sex, age-group, self-reported regularity of attendance and SES. We give the effect size for each factor. All factors are statistically significant due to the high sample sizes. We supply the F values in the text as we conducted analysis of variance on the total scores. We discuss the results of these demographic variables in the discussion to highlight the points raised by this referee to demonstrate the ‘credence’ of the sample.

5 The referee is correct as explained above. This survey included a large range of variables. The other information collected focuses on the major indicators of oral health and function, dental diseases, urgent conditions such as pain and sepsis, complex treatments received, oral health risk factors and behaviour, service considerations and outcomes including access and barriers to care. It is the later aspect that this paper focuses on as the breadth of subject areas is too great a scope for this paper (p21 Foundation Report)[1]. The fieldwork procedures may be summarised as follows: the household was contacted initially by letter in advance of a household call. The household was informed that an interviewer would call to discuss the interview within short period (days). To minimize the number of non-contacts (householders not contactable) all the interviewers were instructed to call at the addresses on different days and at different times of the day (p17 Foundation Report) [1].

6 Each PSU (23 PSUs in each Strategic Health Authority (SHA)) consisted of two postcode sectors with 25 addresses sampled from each (while 750 addresses (15 PSUs) were sampled in Northern Ireland, giving a total sample of 13,400 addresses. Postcode sectors were paired together to help reduce the effects of clustering and increase the diversity of the population within each PSU. The design of the survey was determined by the need to provide data that are representative at a national level (England, Wales and Northern Ireland) but also at the level of each Strategic Health Authority (SHA) in England.

The standard approach in ONS is to pair off contiguous PSUs into collapsed strata and to base the variance of the estimator on the squared differences between PSUs within strata, summed over strata. It would not be appropriate to mix the postcode sector PSUs from multistage samples with those of single stage samples of households, therefore PSUs in the ADHS are paired so that PSUs within a given collapsed stratum always belong to the same survey. Integrated Household Survey User Guide – Volume 1: IHS Background & Methodology 2012 Background And Methodology 2012 [2]

7 We have given clearer descriptions of the MDAS items on page 7. We have listed the items in Box (now relabelled as Table 1). The full presentation is available and easily downloadable. .

8 We have provided a description of the dental attendance question used in the survey used for analysis.

9 There is a companion document that is readily available that covers the barriers to attendance that are unrelated to costs. Reference: [3]...

10 The consenting process was elaborate and formalized as approved by NRES (National Research Ethics Service), the UK ethics body.

11 The Table legends and numbering has been attended to as requested by the referee.
12 F values are presented in the text as we chose to adopt an analysis of variance approach on the total scores.
13 Finer editing issues have now been attended to.

Minor Essential Revisions

14 We have included the minimum and maximum values for the total scores of the MDAS and their meaning
15 We have included a reference number for the Crawford et al 2009 article.
16 We have removed the redundant sentence as recommended.

Discretionary Revisions

17 We have replaced the ‘unpleasant feeling’ wording with ‘dental anxiety’.

Referee #2: Tim T Newton
We are gratified with the reviewer’s comments

Major Compulsory Revisions

none

Minor Essential Revisions

none

Discretionary Revisions

1 We have included the words ‘internally inconsistent’ for ‘reliable’
2 The quotation marks denote the methods have been described verbatim from the Survey Foundation Report [1]. This has raised a query by this referee which was not intended. Hence, as an alternative approach we reference this section of the methods section to show where this important source can be found.

Referee #3: Magnus Hakeberg

We thanks this referee for their comments and that they found the project interesting.

Major Compulsory Revisions

1 We provide a summary sentence to describe the differences between the CDAS and MDAS.
2 We explain in more detail the regular visiting habits variable (see note 8 in referee TC above)
A non-respondent analysis has been conducted using post code data and described in the Foundation Report [1].

We have not included a multi-level analysis and are aware that there may be some shared variation within the household level. We include a sentence to alert the reader of this potential issue of interpretation.

The CFA is not the central issue of this paper and as SEM is becoming more popular the authors have included only a short description and a reference to fit statistics.

We have extended the Procedure section to introduce further detail of how the households were approached and give more explanation of how the data were collected.

We believe that the psychometrics need to be briefly reported in the results section as this addresses the first aim of the study as stated at the end of the introduction.

The CFA is not the main subject of this paper as raised previously in point 5 above. We invite readers to ask for the diagram from the corresponding author. We raise the issue of the MDAS data in this survey providing a non-perfect unidimensional solution, thereby alerting the reader to this possibility. In our experience there are rarely scales that are perfectly psychometrically sound.

The precision of the item means is left as presented. The large sample sizes enable this precision to be achieved although it is recognised that interpretation of such precision at 2 decimal places is not warranted. We include it as a comparator for other studies that may wish to look at mean differences of each item between studies. It also enables other investigators to repeat the CFA. To achieve this we include the correlation coefficients matrix.

We decided to leave the results of the psychometrics in the results text. We believe that this is legitimate as it responds appropriately to the first aim of the study as mentioned already above (see point 7 of this referee).

Minor Essential Revisions

Discretionary Revisions

Referee #4: Arjen J van Wijk

We appreciate this author’s comments especially the endorsement of publishing in an open access publication to ensure easy access to clinicians. This exactly our reasoning as we are hopeful that clinicians might find the percentile calculator of assistance clinically, however they will need easy availability of the link and accompanying information detailed in this paper.

Major Compulsory Revisions

Thirty two per cent (n=3895) refused to participate, four per cent (n = 455) were non-contactable, and 4 per cent (n = 471) were given the label ‘Other non response’ (see page 19 [1]). Reasons for refusal are not reported in the Technical Report (page 18).
We have decided to retain the Bayesian and classical interpretation of confidence intervals and sampling error and measurement error. We accept that clinicians may not find this riveting reading but it can be skipped over by the reader. For the researcher we feel that it is important as there is confusion in the psychometric literature on these issues and therefore we feel it is legitimate to outline. If the Editor believes this to be superfluous, we will of course comply. The referee asks us to make the comparison between the original 2008 norms and the new data. We have included brief information on this comparison in the results section and referred to this in the discussion. We supply the means (SDs) for both surveys and also the statistics test values (raw and adjusted F values controlled for gender, age group and socio-economic status).

Minor Essential Revisions

1. The pairing of post codes issue was referred by the 1st referee and was explained in point 6.
2. The referee has calculated correctly and we have rewritten the ‘Sample and procedure’ section as advised to help clarify this section.
3. As 2 above.
4. We used the 3 category age breakdown that was employed by the ADHS. The three categories produced similar N sizes which was an important consideration especially as we were keen to reduce the 95%CIs to as low as reasonably possible. We supply the means and standard deviations for each age group split by decade in Table 1. We had considered devising a percentile table for each 10 year age grouping but this was regarded as overkill and also made the printed presentation somewhat lengthy and unmanageable for the reader/clinician. Also note that the age variation of dental anxiety rather neatly clusters into a three category breakdown as highlighted in the discussion text.
5. Font size variation has been corrected.
6. Spaces now included
7. Quote mark removed
8. Respondents should be ‘participated’
9. Ethics proposal was approved
10. We have moved the computer program section to the Results section
11. We have included the word ‘alpha’ as recommended by this referee.

Discretionary Revisions
References

