Author’s response to reviews


Authors:

Brian Nicholson (brian.nicholson@phc.ox.ac.uk)
Paul Aveyard (Paul.Aveyard@phc.ox.ac.uk)
Clare Bankhead (clare.bankhead@phc.ox.ac.uk)
Willie Hamilton (w.hamilton@exeter.ac.uk)
Frederick Hobbs (richard.hobbs@phc.ox.ac.uk)
Sarah Lay-Flurrie (sarah.lay-flurrie@phc.ox.ac.uk)

Version: 1 Date: 04 Sep 2019

Author’s response to reviews:

Dear Editor Recchioni,

Many thanks for the opportunity to revise our manuscript entitled "Determinants and extent of weight recording in UK primary care: an analysis of 5 million adult’s electronic health records from 2000 to 2017." For consideration for publication in BMC Medicine.

We address each point below and have submitted both a tracked and clean revised manuscript.

We hope you agree that the changes made in response to the reviewer’s comments have improved the manuscript.

Many thanks,

Dr Brian Nicholson (on behalf of all authors).

Reviewer reports:

Reviewer #1 Matthew Sperrin: This paper describes weight recording patterns within the CPRD database (UK primary care). On the whole it is a well written and conducted analysis, which achieves its stated aims. My detailed comments are below.
1.

Methods / Study population: Does the patient need to be &gt;18 on 1 Jan 2000? Or if they turn 18 after this would this be their start date?

Author response: Patients could turn 18 during or before the study period to be included (those turning 18 during the study were included from 18th birthday). We have edited the methods section to clarify this.

2.

Methods / Weight records: Why are implausible values dropped? The study is looking at whether weight has been measured, not whether it is correctly recorded or is determined plausible.

Author response: We dropped implausible values as on closer inspection of the numerical data recorded as a “weight” measurement it became clear that some “weights” were most probably “heights” (e.g. 1.81). Every attempt was made to retain and convert values which could plausibly have been recorded in pounds or stones and pounds rather than kilos, and only 0.1% of weight measurements were discarded overall. We have added detail to the methods.

3.

Methods / Baseline characteristics: 'closest record': was there any limit on how far before study entry the record was? It is common to use a cut-off and declare the value missing if the record is too long before the index date.

Author response: We chose not to implement a maximum time limit to minimise the amount of missing data. We studied baseline characteristics that are largely stable over time and in most cases baseline characteristics were measured within a reasonable time frame e.g. for over 50% of patients smoking status was recorded within 15 months before study entry. Although it is possible that some characteristics were misclassified, our analysis is reflective of the information GPs would have on hand in the electronic medical record when deciding whether to weight patients/ not.

4.

There is no mention of how missing data was handled. This is especially important given that the focus of the article is on whether weight is recorded (and hence missing). Please add a section to the Methods on this.

Author response: we didn’t replace missing values. We aimed to describe the epidemiology of weight recording in primary care. We have added a sentence in the methods to comment on this.
“We did not replace any missing data as we aimed to characterise patterns of weight recording in the EHR.”

5.

Methods / Repeat weight recording: to clarify, here only the time gap between the first and second weight record are examined? I.e. no subsequent weight records are considered in the Cox model (e.g. in a recurrent event fashion)?

Author response: correct – we have clarified this in the methods section.

6.

Discussion: it would be worth briefly discussing implications for research. Specifically, weight measures may be missing not at random, or subject to informative observation, and this needs to be considered in epidemiological studies using weight measures from primary care. We discussed this briefly in a similar paper that you might find relevant https://www.ncbi.nlm.nih.gov/pubmed/28423794 (as this is a self-cite I don't insist you add it!)

Author response: we agree that a more prominent consideration of the implications for research is warranted. We have added a couple of sentences to the final paragraph of the discussion section referring to the recommended citation and Pedersen et al 2019. “Previous authors have suggested that as recording weight is an informative process (not missing at random) that patterns of weight recording could be used in prediction modelling if careful attention is given to developing appropriate methods to avoid bias (40). Furthermore, any multiple imputation of missing weight records should also be carefully implemented with accompanying sensitivity analyses to explore alternative missing data assumptions (31).

Reviewer #2 Lisa Verberne: This is an observational study on weight recording in primary care. I agree that it is important to be aware of the level of weight recording in primary care databases.

Major comments:

- The study is generally well conducted, but in my opinion it contains too much information, which makes it difficult to read. I would therefore suggest to only focus on comorbidities that belongs to the QOF indicators that have incentivised weight recording, i.e. on diabetes, obesity, serious mental health problems, and cardiovascular diseases, and remove the whole list of ICPC symptoms and ICPC diagnosis from the analyses (Table 4).

Author response: By focussing solely on the QOF indicators that are incentivised in QOF we would lose the bigger picture of how weight recording in these groups compares to the other
ICPC categories. For example, it is useful to know that there is a large amount of weight recording associated with contraception. For this reason we consider it necessary to retain the ICPC analysis. However, we agree that there is a large amount of data presented and so we have reduced the volume of data presented by relegating Table 4 to the Supplementary material (as suggested by Reviewer 3).

Furthermore, I would suggest to remove the health professionals' roles. I don't think it is really important to know who recorded the weight in general practice.

Author response: Knowing the role of the health professionals who records the weight is informative in the context of the UK’s NHS – we are not aware of any study reporting these data before now. Removing these data would not reduce the length of the manuscript very much nor reduce the number of tables.

- The introduction needs some improvement. The aim is not clearly written down in the introduction, and I think it would be interesting to include in the aim that you want to test hypothesis that weight recording is more frequent when incentivised but declines whether the incentives are removed, as is mentioned in the discussion. The sentences in the discussion: "Others have…. removing incentives", would be better placed in the introduction.

Author response: We cannot major on the apparent association between weight recording and incentivisation as we did not design our analysis this way. As mentioned in the discussion “more detailed methods, such as interrupted time-series analysis would be required to investigate this more thoroughly.” We note that the first reviewer states we have achieved our aims as stated.

- In the discussion it is mentioned "For weight, incentives for recording weight in people with severe mental health problems or diabetes were removed in 2012/13: in this study we observed an overall decline in weight recording after this time." I would suggest to present graphs, such as figure 1a, specifically for patients with diabetes, serious mental health problems, and cardiovascular diseases.

Author response: We did not design this study to examine the effect of incentives. Consequently, we consider the place of incentives in interpreting the overall trends in weight recording we have observed in the discussion only. Presenting plots for these subgroups would require us to create codelists for these four clinical domains and to conduct an entirely new analysis.

Minor comments:

- Methods line 7: What does "research quality registration" mean?

Author response: We have clarified this point
Methods line 23: What are weight recording codes?

Author response: We have clarified this point.

Why did you only look at weight recording, and not to both weight and BMI recording?

Author response: Primarily we focused on weight records. Within our analysis we investigated how weight recording might be associated with BMI, but we did not conduct an analysis to document determinants and completeness of BMI recording in CPRD. Weight and BMI data is recorded in the same structured template in Vision clinical systems (from which CPRD GOLD data is drawn). As a result, BMI is calculated automatically when weight is entered (assuming a height measurement is also present in the record). In the raw/uncleaned data, BMI values were recorded alongside 97% of weight values, and there were no BMI values recorded without a contemporaneous weight measurement. Hence, our analysis does represent both weight and BMI recording in Vision systems. BMI recording may differ in other clinical systems, but this would require study in other databases e.g. QResearch drawn from EMIS systems.

Table 1: I would suggest to only calculate percentages over the non-missing categories.

Author response: We have reported percentages across all categories for completeness. Furthermore, given our aims, we believe it is important to understand both missing and non-missing data as a reflection of what GPs know about patients when they decide to record weight. However, to allow easier understanding of the distribution of non-missing characteristics, we have calculated additional percentages across non-missing categories and added these to Table 1 where relevant.

Maybe good to refer to Table 1 in the results section.

Author response: We have added a sentence referring to Table 1 at the beginning of the results.

Table 3: this table only presents data from 2015-2017. Are data from earlier years not available?

Author response: This analysis is computationally intensive and as a result, providing this summary data for all study years is infeasible. We present the analysis for the most recent years in the dataset to provide the most up-to-date indication of current practice as possible. We state in the results that “Similar patterns were observed in previous years, although it appeared that nurses provided a declining proportion of weight recording over time (Table 3).”

Some abbreviations are not clear to me, e.g. NCRAS cancer registry, IMD data, and ONS mortality data, CPRD Codebrowser.
Author response: we have added clarification of all abbreviations as the occur throughout the manuscript.

Reviewer #3 Paula Brauer: A very nice paper. Important topic, well analysed, beautifully written.

Found one typo on line 2 of last page of discussion.

Author response: we have corrected “car,e” to “can”.

In interpreting the data, it is clear that the idea of weight monitoring for obesity prevention in early adulthood as was envisaged by the Canadian Task Force on Preventive Health Care in their 2015 adult obesity guidelines, is not happening. Specific mention of the potential of weight monitoring to improve weight gain prevention in primary care would be appreciated. The last paragraph of the Discussion alludes to the issue but does not mention weight gain in adulthood as a specific prevention issue.

Author response: we have now reviewed the obesity guidelines mentioned and have added the following sentences to the paragraph suggested on the potential of weight monitoring to improve weight gain prevention in primary care

Tables 2 and 4 could be in the supplementary material.

Author response: we have moved table 4 to the supplementary material.

--------------------Editorial Policies---------------------

Please read the following information and revise your manuscript as necessary. If your manuscript does not adhere to our editorial requirements, this may cause a delay while this is addressed. Failure to adhere to our policies may result in rejection of your manuscript.

In accordance with BioMed Central editorial policies and formatting guidelines, all manuscript submissions to BMC Medicine must contain a Declarations section which includes the mandatory sub-sections listed below. Please refer to the journal's Submission Guidelines web page for information regarding the criteria for each sub-section (https://bmcmedicine.biomedcentral.com/).

Where a mandatory Declarations section is not relevant to your study design or article type, please write "Not applicable" in these sections.
For the 'Availability of data and materials' section, please provide information about where the data supporting your findings can be found. We encourage authors to deposit their datasets in publicly available repositories (where available and appropriate), or to be presented within the manuscript and/or additional supporting files. Please note that identifying/confidential patient data should not be shared. Authors who do not wish to share their data must confirm this under this sub-heading and also provide their reasons. For further guidance on how to format this section, please refer to BioMed Central's editorial policies page (see links below).

Declarations

- Ethics approval and consent to participate
- Consent to publish
- Availability of data and materials
- Competing interests
- Funding
- Authors' Contributions
- Acknowledgements

Author response: we have completed these sections.