Author’s response to reviews

Title: The Danish Health and Morbidity Surveys: Study design and participant characteristics.

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Author’s response to reviews:

Dear editor and reviewers,

Thank you for your constructive and useful feedback on our manuscript “The Danish Health and Morbidity Surveys: Study design and participant characteristics” (BMRM-D-18-00378). We hope that you find our answers below satisfactory. Please find here our list of changes/a rebuttal against each point raised by the reviewers.

We have attached a supplementary file with track changes made to the re-submitted version of the paper.

We would like to inform you that we have identified an error in the syntax used to generate some of the results in table 3. It is only the numbers in the column ‘Follow-up population’ that have slightly changed.

On behalf of the authors,
Heidi Amalie Rosendahl Jensen
Reviewer 1

Overall, this is a well-written manuscript, which describes the study design of the three most recent health surveys in Denmark, including the survey mode and response rates.

The authors also highlighted some of the potential benefits from using mixed-mode approaches for the data collection, allowing for the invited individuals to complete either a web questionnaire or an identical paper questionnaire. This approach may partially counteract the general declining trend in response rates observed across several nationwide health surveys around the world.

I have a few comments and suggestions for the authors, which might help further improve the overall merit of this manuscript. Specifically:

Reviewer: 1) If available, it would be informative to show some socio-demographic data of non-responders as compared to responders, across the three most recent surveys (2010, 2013, 2017). This would be important to rule out major selection bias among the study participants in these surveys.

Authors: Table 1 shows the response rates according to sex, age, marital status, and ethnic background across the three most recent surveys. Data seems not be missing at random and, thus, it was decided to use calibrated weights in order to reduce the possible impact of non-response bias (see section about weighting on page 8 in the manuscript).

Reviewer: 2) In the limitations’ section, the authors should also discuss about the self-reported nature of the data collected, which might be a problem especially in the diagnosis of highly prevalent chronic conditions, such as hypertension and diabetes, which also require a physical examination and biomarker data. This is likely to produce and underestimation of prevalence rates for these conditions (and possibly others).

Authors: We have added a paragraph in the limitations’ sections on the risk of underestimations of highly prevalent conditions when using data from population surveys: “Finally, the reliability of self-reported survey data is based on confidence in the accuracy of the respondents’ recall as well as on their motivation to provide truthful information on the topic of interest. However, when examining conditions such as hypertension or diabetes in population surveys, one should keep in mind that such diagnoses also formally require physical examinations and biomarker data to be given. Therefore, self-reported survey data on such and similar conditions could result in underestimated prevalence rates”.
Reviewer: 3) The authors also mentioned about collection of new data and exposure variables. Two areas which would deserve future attention should be: environmental pollution, and use (and abuse) of social media.

Authors: Thank you very much for this valuable comment! We will pay attention to the mentioned areas when planning the next data collection.

Reviewer: 4) The use of web-questionnaires is a great addition. However, I wonder if this approach may be applicable to other contexts and countries as well, with higher degrees of population heterogeneity and without a secure electronical mail service, Digital Post, as in Denmark.

Authors: We have added a short sentence on the use of web-questionnaires: “However, this may not be possible in all countries, e.g. in countries with a high degree of heterogeneity or without a secure electronical mail service (as Digital Post in Denmark)”.

Reviewer: 5) Finally, I wonder if these health surveys can be linked to administrative data on hospitalizations, drug prescriptions, and primary care visits, as well as with mortality data. As the authors are aware, data linkage studies initiatives are happening in many countries and can help overcome some of the challenges in developing cohort studies, which are time consuming and require a large amount of resources.

Authors: Yes, it is possible, and it is mentioned on page 15 in the manuscript. We have now also added some examples of registers that can be linked to our survey data. The following examples of registers have been added: The Danish National Patient Register, the Danish Register of Causes of Death, the Danish National Prescription Register and the Danish National Service Register.

Reviewer 2

Peer reviewer comments – General comments

What is your overall impression of the study? This well-written manuscript titled “The Danish Health and Morbidity Surveys: Study design and participant characteristics” describes the design and participant characteristics of population-based surveys in Denmark and adds to the literature in this less-studied area of research.
What the authors’ have done well? The Introduction, Methods and Results Sections of the paper are well-written, succinct and coherent. The authors reviewed the literature well, provided adequate justification for the study. Study design and data analysis was clear. The Results’ section was informative and Tables were well-presented.

In what ways does it not meet best practice? I have some concerns with majorly the Discussion Section of the manuscript. Some aspects of the Results were not adequately covered in the Discussion Section. I have identified some revisions which might help the authors improve the manuscript.

REQUESTED REVISIONS

Introduction: “Moreover, register data on health care contacts provide only information on the most serious medical conditions, for which medical treatment was necessary. This means that data on less serious cases, albeit more common in the daily life of the general population, are not included in registers (1). Thus, such information can only be revealed by means of health surveys. Moreover, in many countries, adequate official health registers are not available, and, accordingly, health surveys are the only source of data on the population’s health”. Comment: Please, this section could be strengthened by the authors including the specific serious conditions that the registers capture as well as the less-serious but common conditions that populations-based surveys such as this could capture.

Authors: We have added examples on specific serious conditions, which are captured in registers (e.g. acute myocardial infarction, stroke, and cancer), and less-serious but common conditions (e.g. allergy, headache, and osteoarthritis), which could be captured in health surveys.

Methods: This section is generally well-written. Comment: There is a need to include a paragraph on how the findings presented in the current paper was analysed/summarised.

Authors: We have added a paragraph at the end of the Methods section on how the findings presented were analysed/summarised: Descriptive statistics (i.e. percentages) were used to present the results. Furthermore, descriptive statistics were also used to describe the characteristics of the follow-up samples (e.g. the number of invited individuals and respondents, respectively).

Discussion: Comment: There is a need to discuss the implications of the very low response rate in younger individuals (16-24 years).
Authors: We have added a paragraph on this issue in the discussion: “The observed low response rate among young individuals, especially among men aged 16-24 years, is, of course, a matter of concern in the present study. However, the use of calibrated weights made it possible to statistically adjust for the differential non-response e.g. among young men. This means that the responses among e.g. men in age group 16-24 years were given a certain weight so that their impact had a higher weight to account for the low response rate overall within this group. Hence, the use of calibrated weights is, to our knowledge, the best way to minimize the impact of low response rates in certain age groups in a population survey”.

Comment: There is a need to explain or discuss whether the survey questionnaire (whether sent through postal mail or digital post) got to the selected individuals. As it is, an individual who did not receive the mail (questionnaire) for one reason or the other will be included in the non-response group.

Authors: We have added a paragraph on this issue in the discussion: “It cannot be ruled out that some of the invited individuals who were contacted by regular postal service did not receive (and open) these mails, which then may have affected the response rate and the response mode distribution. However, during the data collection the postal service used to deliver the mails made random telephone calls to assess the success rate of the postal mail delivery as part of their quality assurance, which confirmed a high success rate. We do as well not know if all individuals invited by Digital Post and opened this mail, as we did not have access to such data. Further, the combined use of both postal mail and digital post has most likely increased the chance that the majority of invited individual has received the survey invitation, including the questionnaire”.

Comment: Giving the declining response rate despite using diverse approaches and considering that individuals invited for the survey could be tracked, an important recommendation will be to survey the “non-responders” of previous surveys in order to identify reasons for the poor response so as not to compromise the validity and generalizability of the surveys.

Authors: We also find it very important to investigate reasons for non-participation in our and similar surveys. However, the costs related to such a non-response survey exceed our current resources. In addition, there are some ethical concerns about contacting the non-responders once more. The individuals have received multiple reminders and we have promised the invited subjects that we would not contact them again after the final reminder. Previous research has documented reasons for not participating in surveys (see e.g. https://www.ncbi.nlm.nih.gov/pubmed/17984128).
Limitations: Limitations of the study is well-written.

References: The references and reference style are OK.