Author's response to reviews

Title: Regional differences in multidimensional aspects of health: findings from the MRC Cognitive Function and Ageing study

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Author's response to reviews: see over
We thank the reviewers for their detailed comments about our paper. We have modified the introduction and discussion extensively and hope that the paper now has more focus and interest to the international reader. The paper is now fully formatted for BMC journals.

Reviewer 1

General
The results are interesting, however, the discussion is not well elaborated and does not disclose "multidimensional aspects of health", as it could be expected from the title of the paper. There is not clear conclusion formulated.

We have modified the discussion extensively and have now formulated a conclusion.

Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

Figure 2 is confusing and not clear - what the numbers on the pentagons mean? It seems like results could be influenced by different age and educational structure in the regions - this should be discussed.

We have tried a number of different methods to depict these data. The pentagons were the clearest. Age differences would not cause the pentagons to be different. Education is fairly heterogeneous across our centres and doesn’t make much impact in any of the analyses. We have added the scale to the axes to assist the reader.

In the discussion, there are no hypotheses presented on the possible reasons of territorial considerable inequalities, which would be most interesting and could lead to some practical suggestions, important for international readers.

We have not felt able to provide hypotheses on the reasons for the inequalities. We have however ruled out some socio-economic and general morbidity reasons and have expanded the discussion to include this.

Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

In the abstract, confusing abbreviations should not be used.

The only abbreviations are the study name, which has been defined within the abstract, and UK that we felt was sufficiently understood worldwide. No modification undertaken.

Discretionary Revisions (which the author can choose to ignore)

To change the form of Fig. 2.
Not done.

Reviewer 2

General

Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)
I have three major problems with this study.
First, it is not a very good study of regional variation. It is basically a five region study and it is unclear how the variation in this very small sample reflects variation in the population of all UK regions. The authors mention that the three regions where chosen to represent the main national variation in a number of respects (page 5, first paragraph under methods), but this claim is not substantiated.

There were five regions in the study, not three. The UK has not been studied in this amount of detail for more than just self-reported health and life expectancy. The aim of this paper was to go into more depth about the differences seen in the life expectancies by region and introduce other factors.

Secondly, the article is not oriented towards an international readership. BMC Public Health is an international journal. Variation in healthy life expectancy in other countries is only briefly referenced. The authors have apparently not searched the international literature for references in this field of research (e.g. Van Oyen, Taffloreau and Roelands, 1996 for Belgium; Kondo, Mizutami, Kazama et al, 2005 for Japan; Gutiérez-Fisac, Gispert, Solà, 2000 for Spain; Groenewegen, Westert and Boshuizen, 2003 for the Netherlands).

We had kept the paper more national than international to keep it concise, however we have now substantially expanded the international section in both the introduction and discussion and put our results in context with the international literature.

Thirdly, there is no adequate discussion of the implications of the study. The issue of compression of morbidity requires the study of time trends (such as e.g. analysed by Doblhammer and Kytir,2001, for Austria). The discussion of health care policy in tackling inequalities is very brief.

As the reviewer states compression of morbidity requires time trends and it is hoped that this paper will provide the baseline for future studies to demonstrate time trends. We have expanded the discussion about the study implications in terms of public health policy and targeting resources to reduce inequalities.

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Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

There are a number of studies outside the UK that used other indicators than self-perceived health. Please provide references to the international literature.

See above.

On page 3, the headings ‘What is already known about this topic’ and ‘What this paper adds’ are apparently left over from a previous submission elsewhere, as this is not required by BMC Public Health.

We have removed this.

Page 6, last paragraph under ‘Health domains’: it is unclear why the presence of serious health problems is seen as a potential confounder. The measurement of serious health problems (only three conditions where measured) is rather weak.

We have modified the health domains question. The differences in health have been covered in other publications and we did not want to replicate the results here. We did not want the results of
self-reported health and functional impairment in particular to be confounded by any physical health differences. The analyses are now adjusted for the number of impairments (from 0-3) from the full range of health conditions measured.

Page 7: population data for 1991 where used, but it is unclear when the survey was done. If the survey was done at the same time, they appear to be rather old for a descriptive analysis as this article mainly is.

The study population was initially interviewed between 1991-1994. The 1991 census data are therefore the most appropriate. There are no more recent equivalently detailed information. These data provide a baseline with which to compare any new data, to examine longitudinal and cohort differences.

Page 8, first paragraph: here the term ‘frailty’ is used in an undefined manner. Removed.

References are not according to the instructions of BMC Public Health. Modified