Reviewer's report

Title: Premature mortality in Belgium: how did it change over the last 15 years? An analysis of cause specific mortality for the period 1993-2009.

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Reviewer: Willem Aelvoet

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Major Compulsory Revisions

1. Methods: should include a more elaborate sub-section regarding statistical methods. The actual section on indicators mentions only the indicators that are going to be extracted from the data but not the manner in which comparisons are going to be carried out. From the “Results” and “Tables” it becomes clear that ranking and rates ratios were used, but no description or reference regarding the hypothesis testing of the rates ratio is given (the tables mention the rates ratio and asterisks without interpretation). Also, although in the “Results” a section is devoted to “Evolution over time”, merely rates in 1998-199 and 2003-204 are computed without statistical modelling of the evolution nor – in the Discussion section - the reasons why this was not attempted. A graphical display might constitute a better illustration and first approach of the evolution than table 6.

2. Discussion, sub-section “Interpretation of findings” : since in this manuscript ranking is the principal tool used for comparison purposes it should be stressed that ranking is an ordinal variable not an interval one. For instance, if one wants to compare the international ranking of premature versus all age mortality the difference in magnitude should also be taken into account. Plotting the corresponding mortality graphs in Figure 1, would allow one to roughly evaluate the statement “When comparing the international ranking of premature versus all age mortality, premature mortality in men ranks quite similar to the ranking of all age mortality (4th place for premature versus 5th place for overall mortality; data not shown), while premature mortality in women ranks worst (3rd) than all age mortality (7th).” Why not compute a rates ratio and 95%CI and/or 99%CI of age adjusted PYLL rates of Belgian males and females versus respectively EU15 males and females?

More generally ranks are a first, often-used approach but is more and more questioned in the field of institutional performance when it comes to comparison of performance.

Minor essential revisions

The quality of the data of death certificates depends on coding “stricto sensu” but also on certification by the physician. When you use the term coding does it includes the certification aspect? For instance, apart from coding, certification may contribute to the observed regional differences, see Discussion, sub-section “Quality of death certificates data” paragraph 7. The statement “as the category
“symptoms and ill-defined causes” represents a higher proportion of deaths in Wallonia (2.6% in 2008-9) than in Flanders (1.7%) and is almost the same as in Brussels (2.5%),” may be considered to be at least partly due to regional certification differences since the death certificates of Flanders and Brussels are coded by the same Regional Authority.

If the aim consists in improving the quality of data this certification aspect deserves consideration.

Discretionary revisions

1. Discussion, sub-section “Quality of death certificates data”, paragraph 3 the authors state “After evaluation of the data used in the present study, it was decided not to publish the 1998-9 cause specific results, except for neoplasms, because of instability in coding practice.” It may that this instability in coding practice is not seen in Flanders and Brussels, since the Regional Agency in charge of processing these death certificates was set up in 1993. Should this assumption hold, the data regarding Wallonia could be imputed by the method of Autier (Autier P, Boniol M, La VC, Vatten L, Gavin A, Hery C, et al. Disparities in breast cancer mortality trends between 30 European countries: retrospective trend analysis of WHO mortality database. BMJ 2010;341:c3620.). Doing so would allow a more complete analysis of the evolution over time.

2. Discussion, sub-section “Quality of death certificates data”. It is noteworthy to mention that in 1998 a new model of death certificate was introduced as well. In contrast with the previous one the new certificate is conform to the WHO model, which was clearly not the case with the previous. The new one being more suitable to be filled in by the certifying physician, less coding errors are to be expected rather than more.

3. The aim of the study (Introduction, paragraph 3) “to highlight the regional disparities” concludes already that there exist such differences. I would suggest a more cautious phrasing.

4. Results 1st paragraph. Why only the 2009 and not the 2008 data?

Minor issues not for publication

- Methods, All analyses were performed using SAS.3 statistical software. Shouldn’t it be SAS 9.3 ?
- Discussion, sub-section “Interpretation of findings” “…premature mortality in women ranks worst (3rd) than all age mortality (7th).” I would use worse instead of worst.
- “Table 1 : ICD-9 and ICD10 codes10 for the categories and single causes of deaths used.” ICD10 codes10 should be ICD10 codes
- Table 3: the asterisks used should be explained
- More generally in all tables all abbreviations should be written out or entered in a list of abbreviations
Level of interest: An article of importance in its field

Quality of written English: Needs some language corrections before being published

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

'I declare that I have no competing interests'