Author’s response to reviews

Title: Usefulness of Occupation and Industry information in Mortality Data in South Africa from 2006 to 2015

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Reviewers recommendations and responses

Reviewer 1

• Overall the paper would be a useful short report or editorial with recommendations on the following; collection of relevant occupational information; diagnosis of pneumoconiosis; completeness of data and quality assurance.

• The question on 'usual occupation' which is open to interpretation can be replace by one or combination of the following; longest held job and last held job for those who are retired. It must also be borne is mind that the longest held job may not associated with highest accumulative dust exposure i.e. risk of pneumoconiosis.

Our Responses

As reviewer 2 and the editor did not require this we have not reformatted into a short report.

Very useful recommendations – we have included them in the discussion.

Line 307-310 “The question on 'usual occupation' could be replaced by one or a combination of the following; longest held job or last held job for those who are retired. Although not as comprehensive as a complete job history, this would help improve the data available for surveillance.”
• How were the 10 occupational groups chosen and why these 10 groups. For instance do they represent the common occupations or are they related to risk of exposure to dusts or grouped by job skill requirements. The logic used in constructing these 10 groups’ needs to be explained.

• More information need to be provided on how the information on jobs was coded and reliability of the coding procedure.

In 2012 Statistics South Africa Published the South African Standard Classification of occupations which are used by Stats SA to code occupation. We used this already coded data.

Line 82 -83 additional information provided on the SASCO and its basis. “The SASCO list was based on the United Nations international standard classification of occupations (ISCO) to allow for comparisons between countries [28].”

Line 310 – 312 recommendations now include improving SASCO. “Another area for improvement is the SASCO 2012 edition of the standard classification of occupations; it needs to reflect the large number of elementary occupations in South Africa with more separate groups for these workers.”

• Are authors able to estimate the extent of under reporting of mortality data for pneumoconiosis?

Not directly although there was a publication looking at the under reporting of mesothelioma which we can refer to.

Line

• What was the accepted definition used for the reported diagnosis of pneumoconiosis. In addition the authors state that 'the largest number of pneumoconiosis cases were classified as unspecified type and included much higher proportion of women than the specified pneumoconiosis'. This require further clarification /explanation.

There is the usual accepted definition for any underlying cause of death in the death registry and its validity relies on the knowledge of the person certifying the death.

Line 267 clarification provided “This limitation may come from non-medical or poorly trained staff certifying of the cause of death”
Also in line 268 this limitation is found not to detract from the value of the data.

- Too many tables and figures a number of which are not essential i.e. can be moved to supplementary tables.

We considered moving some tables but we strongly feel the tables are necessary to illustrate our conclusion. Thank you for the comment.

Reviewer 2

- In general though the study fails in adequately contextualizing their findings by not relating their findings to the various statutory reports produced by the Dept of Mineral Resources and the National Institute for Occupational Health in South Africa (e.g. http://www.nioh.ac.za/publications/pathology-disease-surveillance-reports/). Although the statement they make in 40-43 is strictly true, they need to point out the aforementioned statutory reporting and place their study in context of these generally available reports. There is a missed opportunity in not analysing precisely how these resources can be augmented by death registration data.

Both reports have been included in the discussion to contextualise the findings.

Line 290-298 “There are two useful surveillance reports on pneumoconiosis in South Africa, the Pathaut report from the National Institute for Occupational Health and the Department of Minerals Occupational Health and Safety Reports. Both of these reports focus solely on the mining industry and provide the incidence of reported or diagnosed pneumoconiosis [26, 27]. The NIOH pathaut reports for 2013-2015 found 921 cases of pneumoconiosis this number is double those found in the mortality data for the same period, but this is not unexpected as these cases are found at autopsy after the cause of death has been certified. The DoM Mine Health and Safety Inspectorate annual report are annually for the financial year. For the year 2013 and 2014, 1714 and 1281 pneumoconiosis cases were reported by mines to the DMR, respectively.”

Line 99. Clarify what the nature of the coding was that restricted the analysis to 2013-2015.

Line 104-116 Clarification provided and link to table with more info in appendix. “In the coding of the South African
mortality data, similar jobs were grouped into ten main groups (table1), but many of these occupations while similar have different exposures. Thus, the value of the ten occupational groups is limited for longitudinal and investigative analysis. For example, elementary worker – the largest employment group - encompasses street workers, cleaners, food preparation assistants, mining and building labourers. This limits the usefulness of mortality data for occupational disease surveillance and investigations. The years from 2013 to 2015 contain more disaggregated occupational information in two extra variables, sub occupation and minor occupation allowing for surveillance investigations. Industry was coded in 9 groups until 2010 when more disaggregated industries were coded. These are useful particularly in conjunction with occupation providing useful information on workplace exposures. Due to the coding of occupation before 2013 not containing the three digits codes, only 2013-2015 data which contained the more detailed information were used to investigate the association between cause of death, usual occupation and industry.”

2. Line 101. Provide reference(s) for the assertion that South African mortality data are of mediocre quality.

Line 117 References added “[15, 16]”

3. Line 109. It is unclear what the final coding of occupations and industry sectors were in the analysis. Perhaps table 1 can be augmented to provide this information.

Line 123 The sentence changed to reflect that the only changes made are listed in the sentence.
4. Line 133. How as this adjustment done? Line 126 a sentence explaining the process was added. “Combining these occupational and industry groups involved adding the cases and non-cases from each group together to create one new group. “

5. Line 137. Do you mean annual mortality? Line 149 changed to annual mortality

6. Line 140. Figure 1. what is the denominator for the calculated mortality rates? Should the mortality rates not be age standardized as the annual age distribution is likely changing over the period under consideration? The denominator used was the annual South African population. This observation of a decrease in the crude mortality rates was used to illustrate a basic trend and not age standardised as it was not key to the publication. Calculating age-standardised rates is a valuable suggestion for a future trends paper.

7. Line 147. Table 2. Row heading "Proportion who are employed, only" is unclear. Line 152 changed to “Proportion who reported being employed”

8. Line 180. Substantiate the assertion in this sentence. Line 190 a reference added for the statement [17]

9. Line 191. Table 6. The significant increased of odds to die of pneumoconiosis for nurses are not discussed. Line 221 – 223 discussion of the significant odds of nurses discussed. “One pneumoconiosis death reported a nursing occupation. This case may have been a misclassified TB case as TB may be confused with pneumoconiosis, or it could represent a nurse employed on a mine. This case will require further investigation [19].”

10. Line 222. "...are many competing interests so other data sources may be used..." The meaning of this statement is unclear. Line 240-41 the statement was clarified. “for funds”

11. Discussion. The discussion can be tightened and contains Discussion edited.
material that should rather be included in the results.