

## PEER REVIEW HISTORY

BMJ Open publishes all reviews undertaken for accepted manuscripts. Reviewers are asked to complete a checklist review form (<http://bmjopen.bmj.com/site/about/resources/checklist.pdf>) and are provided with free text boxes to elaborate on their assessment. These free text comments are reproduced below.

### ARTICLE DETAILS

<b>TITLE (PROVISIONAL)</b>	Trends in Occupational Diseases in Finland, 1975–2013 - a register study
<b>AUTHORS</b>	Talola, Nina; Oksa, Panu; Sauni, Riitta; Virtanen, Simo; Nevalainen, Jaakko; Saalo, Anja; Uitti, Jukka

### VERSION 1 - REVIEW

<b>REVIEWER</b>	Henk van der Molen Amsterdam UMC, University of Amsterdam, Department: Coronel Institute of Occupational Health, Netherlands Center for Occupational Diseases, Amsterdam Public Health research institute, Meibergdreef 9, Amsterdam, Netherlands
<b>REVIEW RETURNED</b>	23-Jul-2018

<b>GENERAL COMMENTS</b>	<p>Dear authors,</p> <p>I have read with interest this paper about Trends in Occupational Diseases (ODs) in Finland, 1975–2013. It is a relevant study providing trends in ODs during almost 40 years. The paper is well written and analyzed correctly.</p> <p>I have one main concern which I suppose the authors can address.</p> <p>Since the authors present and discuss that screening campaigns and legislative changes have caused temporary increases in ODs, I recommend also a formal analyses e.g. in the form of interrupted times series. I suggest to extend the objectives and explore these effects in a methodological sound way or be more cautious in the interpretation of these trends.</p> <p>Other minor points</p> <p>Page 2: The third and fourth bullet of strengths and limitations are a bit vague. So the third bullet: Still, some physicians may neglect to notify occupational diseases. Moreover, not all physicians have training in occupational medicine, and may thus fail to connect diseases with working conditions. For these reasons, some occupational diseases may remain neither diagnosed nor recorded. I suppose this is a limitation, so are the results of the time trends biased? The fourth bullet I do not understand.</p> <p>Page 3, line 12. Besides registries, there are also other ways for identifying ODs.</p> <p>Page 3 Please define difference in suspected and recognized ODs in more detail.</p> <p>Page 3 Are there any criteria for the assessments of ODs? What is interrater reliability for these assessments?</p> <p>Page 3: what is the meaning to report the goal of 10% reduction in ODs, is that the reason for this study?</p>
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	<p>Page 5 classification of ODs. It deserves more details about case definitions. I could not retrieve appendix 5, possibly this is more detailed.</p> <p>Page 8 – 11. Discussion is very broad and hybrid, See also my main concern. For example: the first paragraph state that reliable statistics on ODs offer a solid basis for OHS policies. Why? How do you know? Is that the result of your study?</p> <p>Page 11 line 8-9. ..these phenomena can be seen as a results of enterprises paying more attention to improvement of working conditions and OHS. However, that is not based on this study and only a hypothesis.</p> <p>Strobe checklist: please check again, and try to substantiate possible biases in the registry. I doubt whether STROBE is useful for this type of study.</p>
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<b>REVIEWER</b>	George Rachiotis The University of Thessaly, Greece
<b>REVIEW RETURNED</b>	01-Aug-2018

<b>GENERAL COMMENTS</b>	<p>I have read with interest the manuscript entitled: Trends in Occupational Diseases in Finland, 1975–2013. This is a well written and concise paper which deserves to be published in BMJ Open. However, I feel that it would be beneficial for the reader if the authors clarify some points.</p> <ol style="list-style-type: none"> <li>1. I missed the abstract.</li> <li>2. Background. I suggest that authors could discuss the issue of under-reporting and under registration of occupational diseases.</li> <li>3. Background: Additional information about the procedure for the recognition of occupational diseases in Finland is needed.</li> <li>4. Results: Please provide data on the incidence of asbestos-related diseases with emphasis on mesothelioma.</li> <li>5. Discussion: Perhaps the authors could consider the option to discuss their results in relation to the data from countries with higher underreporting rates (Alexopoulos et al. Under registration of occupational diseases: The case of Greece. Occup Med (Lond). 2005 Jan;55(1):64-5.</li> <li>6. Discussion: I missed a paragraph related to the quality of the data selected. A previous European study reported that the average quality of data was low among six EU countries (Spreeuwers et al. Evaluation of occupational disease surveillance in six EU countries. Occup Med (Lond). 2010 Oct;60(7):509-16.</li> </ol> <p>6. The advantages and limitations of the study should be included in the discussion section.</p>
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### VERSION 1 – AUTHOR RESPONSE

We thank the reviewers for their constructive comments and their time spent to analyze this manuscript. The point-to-point responses and explanations related to their comments are listed below:

Reviewer: 1

Reviewer Name: Henk van der Molen

Institution and Country: Amsterdam UMC, University of Amsterdam, Department: Coronel Institute of Occupational Health, Netherlands Center for Occupational Diseases, Amsterdam Public Health research institute, Meibergdreef 9, Amsterdam, Netherlands Please state any competing interests or state 'None declared': None declared

Please leave your comments for the authors below

Dear authors,

I have read with interest this paper about Trends in Occupational Diseases (ODs) in Finland, 1975–2013. It is a relevant study providing trends in ODs during almost 40 years. The paper is well written and analyzed correctly.

I have one main concern which I suppose the authors can address.

Since the authors present and discuss that screening campaigns and legislative changes have caused temporary increases in ODs, I recommend also a formal analyses e.g. in the form of interrupted times series. I suggest to extend the objectives and explore these effects in a methodological sound way or be more cautious in the interpretation of these trends.

- We agree with the reviewer's view of the importance of formal ITS analyses in investigating the effects of campaigns or new legislation on the time series. The idea of this manuscript is overall description of decennial trends over an extensively long time period (1975-2013). During these decades working environments have gone through a large number changes (not only the ones discussed in the paper, e.g. technical progress of industry) making it hard to formally test or reasonable attribute changes in the incidences to single events. Indeed, we believe that screening campaigns and legislative changes have caused many increases in different OD incidences at different times, but are not necessarily the only contributors to those developments. The use of ITS would provide focus on a detailed analysis of well-identifiable separate events, and would have lengthened and fragmented manuscript. Effect of e.g. asbestos screening campaign has been described in detail in an article by Koskinen et al. 1996, ref 8. The number of asbestos related diseases reported to the register multiplied for years after the campaign. Therefore, we feel that a more descriptive manner of presentation enables a more concise overview of the time period.

Other minor points

Page 2: The third and fourth bullet of strengths and limitations are a bit vague. So the third bullet: Still, some physicians may neglect to notify occupational diseases. Moreover, not all physicians have training in occupational medicine, and may thus fail to connect diseases with working conditions. For these reasons, some occupational diseases may remain neither diagnosed nor recorded. I suppose this is a limitation, so are the results of the time trends biased? The fourth bullet I do not understand.

- We have amended the bullet points two, three and four and added bullet five.

Page 3, line 12. Besides registries, there are also other ways for identifying ODs.

- The reviewer is right. We have amended the sentence: " All WRDs indicate defects in working conditions or the working environment, but ODs which are reported to a register because of e.g. compensation, offer a database for trend analysis."

Page 3 Please define difference in suspected and recognized ODs in more detail.

- A suspected case is notified and reported to the insurance company or to the labour protection authority but it is not recognized as an occupational disease by the insurance company and thus not compensated. On page 4 lines 32-35 we have written: "Recognition means that the insurance

company has received sufficient data and decided to officially recognize a person's condition as an occupational disease in accordance with Finnish legislation."

Page 3 Are there any criteria for the assessments of ODs? What is interrater reliability for these assessments?

- Diagnostic criteria for ODs are written in textbooks. The Finnish criteria are in line with the diagnostic criteria of ODs in EU. Recognition of every notified case is made by an expert physician in insurance company according to same diagnostic criteria. It is possible to make an appeal about the decision of insurance company.

Page 3: what is the meaning to report the goal of 10% reduction in ODs, is that the reason for this study?

- National OSH policy in Finland (Policies for the work environment and well-being at work until 2020, Publications of the Ministry of Social Affairs and Health 2011:14) has set a target according to which the number of occupational diseases should decrease by 10% by 2020. However, this was not the reason for this study and to avoid misunderstanding, we amended the sentence.

Page 5 classification of ODs. It deserves more details about case definitions. I could not retrieve appendix 5, possibly this is more detailed.

- We apologize, the reference is missing. We have added it: reference 3 (Oksa P, Palo L, Saalo A et al. Occupational diseases in Finland in 2012. New cases of recognized and suspected occupational diseases. FIOH Helsinki 2014, 79p. <http://urn.fi/URN:ISBN:978-952-261-470-4> (pdf) )

Page 8 – 11. Discussion is very broad and hybrid, See also my main concern. For example: the first paragraph state that reliable statistics on ODs offer a solid basis for OHS policies. Why? How do you know? Is that the result of your study?

- Thank you for this comment! We have amended the Discussion being more based on our results.

Page 11 line 8-9. ..these phenomena can be seen as a results of enterprises paying more attention to improvement of working conditions and OHS. However, that is not based on this study and only a hypothesis.

Strobe checklist: please check again, and try to substantiate possible biases in the registry. I doubt whether STROBE is useful for this type of study.

- We agree with the reviewer that STROBE checklist does not suit to this kind of study. We have amended the text so that hypotheses are more clearly separated from results.

Reviewer: 2

Reviewer Name: George Rachiotis

Institution and Country: The University of Thessaly, Greece Please state any competing interests or state 'None declared': None declared

Please leave your comments for the authors below I have read with interest the manuscript entitled: Trends in Occupational Diseases in Finland, 1975–2013. This is a well written and concise paper which deserves to be published in BMJ Open. However, I feel that it would be beneficial for the reader if the authors clarify some points.

1. I missed the abstract.

- We apologize for this. The abstract was cut by mistake and is now in its place in the manuscript.

2. Background. I suggest that authors could discuss the issue of under-reporting and under registration of occupational diseases.

- Thank you for this suggestion! We have added the text about under-reporting and under-registration in the Discussion. See below.

3. Background: Additional information about the procedure for the recognition of occupational diseases in Finland is needed.

- Thank you for this suggestion! A suspected case is notified and reported to the insurance company or to the labour protection authority but it is not recognized as an occupational disease by the insurance company and thus not compensated. On page 4 lines 32-35 we have written: "Recognition means that the insurance company has received sufficient data and decided to officially recognize a person's condition as an occupational disease in accordance with Finnish legislation."

4. Results: Please provide data on the incidence of asbestos-related diseases with emphasis on mesothelioma.

- We have used a classification explained on page 5-6. All asbestos-induced diseases are grouped together. We don't provide data on each disease separately, because the article would be too long to be published.

5. Discussion: Perhaps the authors could consider the option to discuss their results in relation to the data from countries with higher underreporting rates (Alexopoulos et al. Under registration of occupational diseases: The case of Greece. *Occup Med (Lond)*. 2005 Jan;55(1):64-5.

- Thank you for raising up an important topic, notification system of occupational diseases varies by country significantly. We avoided international comparisons in order to keep the manuscript concise

6. Discussion: I missed a paragraph related to the quality of the data selected. A previous European study reported that the average quality of data was low among six EU countries (Spreeuwiers et al. Evaluation of occupational disease surveillance in six EU countries. *Occup Med (Lond)*. 2010 Oct;60(7):509-16.

- Thank you for this suggestion. We have added the following sentence on page 10, line 11: "In an evaluation of occupational disease surveillance in six EU countries the Finnish Register of Occupational Diseases was rated as one of the best ones."

6. The advantages and limitations of the study should be included in the discussion section.

- We have added text about strengths and limitations in Discussion.

## VERSION 2 – REVIEW

<b>REVIEWER</b>	Henk van der molen Amsterdam UMC, Coronel Institute of Occupational Health, Netherlands Center for Occupational Diseases, Amsterdam Public Health research institute, PO Box 22660, 1100 DD Amsterdam, The Netherlands
<b>REVIEW RETURNED</b>	12-Nov-2018

<b>GENERAL COMMENTS</b>	Dear authors, Thanks for the opportunity to review your revised manuscript!  I would like to see more discussion on the limitations, however the minor alterations are sufficient for me.
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<b>REVIEWER</b>	George Rachiotis University of Thessaly
<b>REVIEW RETURNED</b>	26-Nov-2018

<b>GENERAL COMMENTS</b>	The authors have adequately addressed almost all of my comments.
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