Author's response to reviews

Title: How to characterize the public health workforce based on essential public health operations? Environmental public health workers in the Netherlands as an example

Authors:

marielle jamboes (m.jamboes@amc.nl)
rens van honschooten (imrens@hotmail.com)
jelle doosje (jdoosje@ggdghor.nl)
karien stronks (k.stronks@amc.nl)
marie-louise Essink-bot (m.l.essink-bot@amc.nl)

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Author's response to reviews: see over
Dear Editor,

We thank the reviewers for assessing our manuscript and providing us with very useful feedback.

Please find attached our revised manuscript entitled: ‘How to characterize the public health workforce based on essential public health operations? Environmental public health workers in the Netherlands as an example’ by M. Jambroes, R. van Honschooten, J. Doosje, K. Stronks, M.L. Essink-Bot.

A point-by-point description of the changes made is listed below.

Reviewer 1:

Point 1:
Abstract: data about the sample size and the response rate are misleading since the authors did not reach a 70% response rate from 472 public health workers.

We removed the response rate of 70% in the core group from the abstract

Point 2:

a. Pag. 7, line 67: it should be helpful to mention (as reference) the existing policy documents (better if they have a English version)

We specified the documents we used in the text and added some of the documents in the reference list. Unfortunately none of the documents are in English:

‘As the EPHOs are not yet implemented in public health practice in the Netherlands, we specified the EPHOs to environmental public health using existing policy documents, e.g. from the professional organisation of environmental public health physicians, guidelines on the size of the environmental public health workforce and the most recent advice of the Advisory Committee on Medical Manpower planning [Capaciteitsorgaan] on the training inflow of environmental public health physicians’. [21]

b. Pag 7. Line 71 and table 1: it is necessary to explain the definition of EPHO n.8 for environmental public health as quality assurance

Quality assurance was not the right translation of EPHO 8, we changed it into ‘Assuring sustainable organisational structures, enforcement of the quality of health services’. We adapted table 1 accordingly and added examples of daily environmental public health practices, also of EPHO 8.

c. Pag 7: it would be useful to readers to read some of the examples proposed
as daily environmental public health practice

We removed table 2 (as all information was already mentioned in the text) and adapted table 1 by adding some examples of daily environmental public health practices to all EPHOs, as were used in the questionnaire.

Point 3:

a. Feasibility section: it is not clear how the numbers reported in the 2nd paragraph (lines from 186 to 190) are linked to the previous paragraph.

We removed the text on partial responders, as this number was mentioned in the previous paragraph already.

b. In many parts of the results physicians are cited but the number (n. 28 respondents) is mentioned only in the section validity check. This professional category should be better specified in the section “composition of the environmental public health workforce” and in table 3.

We have specified the group of physicians in the paragraph on the composition of the workforce, lines 257-260: ‘28 Respondents were physician, 10 were trained as environmental public health physician, 10 were trained as public health physician and 8 were physicians ‘other’, of which 6 were in training for environmental public health physician’. We added the physicians to Table 2 (before table 3) as well.

c. Pag 14 lines from 246 to 249: adopted definitions are not corresponding to those reported in table 1.

We aligned the EPHO definitions in the text with table 1, lines 267-276.

d. Pag. 14 lines 250 to 252: this statement is interesting but no data support it.

We added an extra table to the manuscript, table 3. This table includes the data from figure 1, the average number of hours spent per EPHO and the % of time spent per EPHO for nurses and physicians.

Point 4:

a. Table 1: it should be completed with foot notes explaining: references for EPHO and the way EPHOS for environmental public health have been developed.

We added a footnote to table 1, with regard to WHO's EPHOs. The way EPHOs for environmental public health were developed is described in the text (lines 69-76): ‘As the EPHOs are not yet implemented in public health practice in the Netherlands, we operationalized the EPHOs to environmental public health using existing policy documents, e.g. from the professional organisation of environmental public health physicians, guidelines on the size of the environmental public health workforce and the most recent advise of the Advisory Committee on Medical Manpower planning [Capaciteitsorgaan] on the training inflow of environmental public health physicians.[21] We also involved a group of 5 national environmental public health experts who agreed on the resulting specifications’. 
b. Table 3: columns definition should be changed since at the moment they are confusing; the total number of the respondent should be mentioned.

*Table 3 is in the revised document table 2. We changed the column definitions and added the total number of respondents.*

c. Figure 1: it is not really of immediate reading. It could be helpful to propose a table including also the numbers of FTE per each EPHO.

*We improved the lay-out of figure 1 and added the proposed table with % of FTEs per EPHO, in the revised manuscript table 3.*

Reviewer 2:

Point 1:
Definitions of terminology used should be provided in the introduction / background. Definition of “Environmental Public Health” should be at least discussed. The background is predominantly based on US references, out of 17 cited references, only 4 are European!

*We removed the terminology on EPHOs to the methodology section and provided more information on the EPHOs: ‘To assess the services provided by the workforce we used the recently defined essential public health operations (EPHOs) by the World Health Organisation in Europe (WHO Eur). [20] The EPHOs describe the main tasks of public health and can be used as a unifying and guiding basis to monitor and evaluate policies, strategies and actions for reforms and improvement in public health’. We also added some examples of Environmental public health to the text and added European references.*

Point 2:
The all-inclusive approach used here is questionable as it generated in the peripheral group only 17 additional questionnaires with a participation of 28%. It might be preferable to exclude the peripheral sample from the analysis. Likewise a presentation of EPHOs specified for Environmental Public Health in the NL should be arranged also for degrees; only 2% of the sample does not have a university degree (3 categories thereof).

*The reason why we have chosen for an all-inclusive approach is that we were aiming to develop a strategy to enumerate the public health workforce also across different organisations. As environmental public health is mainly provided through local public health services but also through other organisations we decided to include those organisations as well. The fact that this approach resulted in 17 additional questionnaires shows at least that it is possible to enumerate in a uniform way, across organisations. Indeed, the response rate in the peripheral group was much lower than in the core group. A reason might be that more people in this group were not involved in environmental public health at all and thus were less willing to participate. We decided to include the peripheral group in the analysis as these respondents belong to the environmental public health workforce, according to the definition we used and agree that, on hindsight, for environmental public health adding the peripheral group did only provide little extra information on the size and composition of the workforce.*
We have done the analysis excluding the data of the peripheral group and except for the total FTEs, the overall results did not change.

Not 2% but 20% had a non-academic degree. Terminology on educational level might differ between countries. We changed the terminology of degrees from university-applied science, into professional education, applied science. We also added data on the provision of EPHOs per degree (nurses and physicians) in table 3.

Point 3:
Recruitment of participants needs to be explained better. The first mailing list includes “all workers of the departments of environmental public health of the local public health services and their direct network contacts”. International readers would welcome information about number of local public health services and their organization in NL, as well as explanation of “their direct network contacts” including numbers. The second mailing list also needs clarification: definitions and numbers. More specific selection criteria should be presented. International readers would welcome information about number of specific research institutes and departments of public health of universities in NL, and how they relate to environmental public health.

We added information about the local public health services in a textbox. Furthermore we specified the text regarding the composition of both mailing lists, including information about the research institute and the universities:

‘In the first mailing list (core group; n=182), we included all workers of the departments of environmental public health of the local public health services. Then, we explored who might also be likely performing environmental public health EPHOs outside the department of environmental public health of the local public health services, and included those addresses in the second mailing list (peripheral group; n=290). For example, in order to recruit respondents involved in EPHOs ‘surveillance’ and ‘health promotion’ we approached all workers from the divisions of epidemiology and health promotion of the local public health services. Similarly, we approached direct network contacts, like employees of the Ministry of Health, Welfare and Sport, environmental public health workers from the National Institute for Public Health and the Environment and departments of public health of two universities in order to recruit workers involved in EPHO ‘advancing public health research’ and EPHO ‘governance for health’.

Point 4:
The authors defined the EPHOs in a very broad way (table 1) arguing that their wording describes the situation in the NL. If that is so international comparison becomes difficult, against the obvious intentions of the authors. For international comparison it would have been helpful to refer to the list of competences developed by ASPHER adopted by WHO Europe for the EPHOs. ASPHER list of competence are published by Birt C and Foldspang A. It is available in the publication: European Core Competences for Public Health Professionals (ECCPHP). ASPHER’s European Public Health Core Competences Programme. ASPHER Publication No. 5. Brussels: ASPHER, 2011.
http://www.aspher.org/repository/index.php?get_action=open_file&repository_id=0&file=%2FASPHER%. An example of the use of ASPHER competences related to EPHOs is provided...
in the 2 publications on the ASPHER Survey among Schools of Public Health in
the European Region, published in the Int J Public Health in 2013 and 2014
(Bjegovic-Mikanovic et al., Vukovic et al.). The use of these competences to
analyse the representation of environmental EPHOs drawing from the adopted
competences would make the approach used much stronger and comparable.
Furthermore, it is not clear to me how EPHO 8 translates to 2 words: ”quality
assurance” when it refers to “Assuring sustainable organizational structures and
financing” and contains other recommendations (in EPHO 8 “quality” is not
mentioned and could be considered only as structural variable); or EPHO 9 to
R&D when it relates to “Advocacy, communication and social mobilization fro
health”. Similar observation is related to EPHO 10, described in the article as
“Regional support and consultation”, while it refers to “Advancing public health
research to inform policy and practice”. In this context, Table 1 needs
corrections.

We corrected Table 1 and the numbering of the EPHOs is now conform the WHO Eur
numbering. We also added examples of daily environmental public health practice to this
table, to give insight in the translation of EPHOs into examples that are recognisable for
professionals.

We agree with the reviewer that the list of competencies, as developed by ASPHER, is a very
useful list. We are aware of the two publications and these studies have clearly demonstrat
ed the added value of the competency list for cross European studies regarding public health
education.

The reason why we did not use the competency list in this study is that we were aiming to
enumerate the size and composition of the multi-disciplinary workforce and the services
provided. We did not explore whether individual workers were competent or not. Since we
now know which of the EPHOs are provided, by whom and for how many FTEs, a next
interesting step would be to explore examine the corresponding competencies are sufficiently
addressed in the curricula. We added this suggestion to the discussion and referred to the
above mentioned work previously done on public health competencies in Europe: ‘Our study
also revealed data on the EPHOs provided, by whom and for how many hours. A next step to
support workforce planning would be to examine whether corresponding competencies are
sufficiently addressed in the curricula’. [25, 26].

Point 5:
Instead of examples of questionnaire items given in Table 2, it would be
necessary to give an example of questions related to EPHOs and environmental
public health. Table 1 is not enough to understand how authors relate elements /
activities of EPHOs to specific environmental public health activities. In Line
85-86 authors stated: “To facilitate completing this part of the questionnaire
examples of daily environmental public health practice were added to each of the
EPHOs”. It would be necessary to provide these examples!

We adapted table 1 by adding examples of daily environmental public health practices to all
EPHOs, as were used in the questionnaire. We removed table 2 from the manuscript as the
information in table 2 is already mentioned in the text.
We explained in the text paragraph ‘development of the questionnaire’: ‘For each separate
EPHO, respondents were asked to indicate explicitly if they delivered this operation, and if
yes, the average time spent on each of them per week. To facilitate completing this part of the
questionnaire examples of daily environmental public health practice were added to each of the EPHOs, see table 1.’

The question in the questionnaire was formulated: ‘Please indicate whether the essential public health operation as mentioned below, is part of your work’. If workers answered the question with YES, the next question was: ‘Please indicate how many hours per week, on average, you spend on this essential public health operation’.

Point 6:
The selection of a level of 0.5 hours per week seems to be very modest (to generate a sufficient number of respondents?); is it likely at this level to maintain proficiency?

*We explained in the text why we choose for 0.5 hrs:*
‘We made this definition operational as: all those who consider environmental public health as part of their job and who are responsible for providing any of the EPHOs for (on average) ≥ 0.5 h/week. This small number of hours per week was chosen to capture all disciplines and services provided. For example, the work of the health care inspectorate includes promotion of public health and responsible care through effective enforcement of the quality of health services. For environmental public health these services are delivered only 2-3 weeks per year’.

Point 7:
The response rate is usually a part of method and not of results.

*We considered moving the response rate to the method section, however we decided to mention it in the results section as measuring the feasibility of our method was one of the research questions and the response rate was one of the criteria to measure the feasibility.*

Point 8:
International readers would welcome to know at least average number of hours per week spent on environmental public health activities (mean ± SD) and also distribution of hours per EPHOs.

*We added an extra table to the manuscript, in the revised version table 3. This table includes the average number of hours spent per week on each of the EPHOs, as well as the percentage of time physicians and nurses spent on each of the EPHOs.*

Point 9:
The percentage of 27% in the abstract is not reflected in the results (lines 256-260).

*The percentage of 27% is now included in table 3, where all percentages FTE per EPHO are mentioned.*

Point 10:
In the discussion underestimation is discussed but overestimation is equally possible especially with reference to the peripheral sample (with response rate 28%) and because of self-declaration and imprecise definitions?
We agree with the reviewer that overestimation is also possible and we added that to the discussion section: ‘It could be that our selection was incomplete and in that case the total available capacity estimated in this study may be an underestimation of the real capacity. However, overestimation is also possible.

Point 11: Therefore it might be preferable to exclude the peripheral sample from the analysis. Another terminological issue in discussion: Do the authors mean efficacy or rather effectiveness (line 288)?

As explained under point 2: The reason why we have chosen for an all-inclusive approach is that we were aiming to develop a strategy to enumerate the public health workforce also across different organisations. As environmental public health is mainly provided through local public health services but also through other organisations we decided to include those organisations as well. The fact that this approach resulted in 17 additional questionnaires shows at least that it is possible to enumerate in a uniform way, across organisations. Indeed, the response rate in the peripheral group is much lower than in the core group. A reason might be that more people in this group are not involved in environmental public health at all and thus are less willing to participate. We decided to include the peripheral group in the analysis as these respondents belong to the environmental public health workforce, according to the definition we used. We have done the analysis without the data from the peripheral group as well and expect for the total amount of FTEs, the overall results did not change.

‘Efficacy’ is not mentioned anymore in the discussion since we added the a paragraph on workforce planning.

Point 12:
   a. In abstract 472 environmental public health workers are mentioned as invited, while in method summing up the first and the second list is giving 473.

   Adapted into 472

   b. “Health manpower” is listed as a keyword despite it is never used in the article. It should be deleted.

   We deleted Health manpower planning and added workforce planning

   c. Line 41: Textbox 1 is missing. Maybe authors refer to Table?

   We added the textbox

   d. Line 60: What about definition by degree? Much sharper and more relevant re EPHOs! Should be discussed at least, here mix of everything in terms of self declaration.

   Our study showed the multi-disciplinarity of the workforce and the different degrees. We added data to the manuscript (table 3), on the percentage of time nurses and physicians spent on each of the EPHOs. This table clearly shows that different educational degrees provide the EPHOs in different quantities. This is also mentioned in the result section of the text: ‘Compared to environmental public health physicians, environmental public health
nurses were less often involved in performing the EPHOs, ‘Advancing research’ and ‘regional consultation and support’ (table 3).’

e. Line 146: the total capacity is 75,5 FTEs, while in the line 202, the total capacity is 74,5 FTEs.

*We adapted the number of FTE into 75,5FTE*

We hope these point to point reaction to the reviewers and the major revisions made in the text are sufficient to reconsider publication of our manuscript in the BMC Public Health.

We look forward to receiving your response in due course.

Yours sincerely, on behalf of all co-authors,

Marielle Jambroes MD MPH
Dept. of Social Medicine,
Academic Medical Center/University of Amsterdam
The Netherlands
Tel. + 31 20 5664892, fax + 31 20 6972316

e-mail: m.jambroes@amc.nl