Reviewer's report

Title: Burnout among medical professors; a nationwide survey

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Review of: “Burnout among medical professors; a nationwide survey.”

In this paper the authors aim to assess the level of burnout among full-time medical professors in the Netherlands. In the cross-sectional study they also study associations between emotional exhaustion and both personal and work-related factors. This is an interesting paper, but there are several comments:

Major Compulsory Revisions

1. In the abstract the authors define 23.8% of the sample as burned out. Later in the study they define burnout as scoring above a certain cut-off on emotional exhaustion. This needs to be defined also in the abstract.

2. The authors discuss risk factors for burnout in the Introduction. They refer to papers finding that being single and child-less (page 3, second paragraph) can increase the risk of burnout.

They also, especially in view of the results that they get in this study, need to discuss the emerging literature on work-home interface stress and the association of this to burnout (see for example:


3. In the same paragraph (page 3, second paragraph) the authors refer to specific stressors for doctors regarding risk of burnout, such as “demanding patients” and “threat of liability”. It would be relevant to discuss these issues in relation to the group assessed in this study – full-time professors – who probably have less of these kinds of stressors.

4. Burnout is potentially a condition that can indicate mental problems. Were all the interviewed professors at work or were some of them (with the highest levels of burnout) on sick leave?

5. The categorization of the variables “age” and “number of years since appointment” is not described in the Methods section. Why are these variables categorized? I would suggest using both these variables as continuous variables, which will make the interpretation of the multiple regression analysis easier.

In table 1 we also see that 91% of all the participants are aged between 46 and 65 - including two of the 5 age categories. This categorization thus reduces the power substantially.

6. The Hirsch index is not a very commonly used term. It therefore needs to be described in the Methods section. The authors need to consider the fact that the Hirsch index is very sensitive to differences in citing traditions between journals. Is the Hirsch index comparable among medical specialties?

7. How high are the correlations between the variables “age”, “years since appointment” and “children living at home”? Do these correlations allow the three variables to be used in the same regression analysis?

8. In the Methods section there should be a description of how the authors handled missing values in the questionnaires. Were missing values imputed?

9. In the Results section I would like to see the raw scores for the different dimensions of burnout, engagement and the specialties that the professors belonged to (table 1). Regarding the Discussion:

10. The authors acknowledge a low response rate in this study. It should be possible to compare the sample to the group of all professors in the Netherlands who received the questionnaire regarding gender, age and specialty for example – in order to assess if the sample is representative.
11. The authors discuss the relation between the Hirsch index and the dimension “professional accomplishment” in the burnout questionnaire (page 9, first paragraph). Publishing and being cited is a very important part of the evaluation of professors in general, and one would therefore expect a very high correlation between personal accomplishment and the Hirsch index. The linear relationship between these also suggest they might measure the same concept. This needs to be discussed.

12. The authors discuss the rate of emotional exhaustion above the cut-off value as high among professors (23.8%).

I have two comments to this:

a) Maslach’s definition of high, medium and low burnout was originally only a division of the sample into equal thirds, and the cut-off value was not related to any clinical correlates. Burnout as an entity is also most often defined as being above cut-off on at least two dimensions (emotional exhaustion and depersonalization) or on all three dimensions. This needs to be discussed.

b) The authors refer to other studies of doctors (page 11, second paragraph), where the proportion of doctors with high levels of emotional exhaustion is higher than in the present study (75% for orthopaedic surgeons 54% in gynaecologists) – although commenting that other cut-offs are used. Does this indicate that being a professor could be “protective” regarding burnout? Do the authors have any comparison samples where the same cut-off has been used?

13. In the third paragraph on page 11 the authors discuss the possible interaction between the three variables “having children at home”, “age” and “time since appointment”. Here it would be appropriate to discuss the literature on “work-home interaction stress” – (for references see above in number 2). It would seem that age, children at home and phase of work life could interact in explaining degree of risk for burnout.

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Acceptable

**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