Author’s response to reviews

Title: Active listing and more consultations in primary care are associated with reduced hospitalisation in a Swedish population.

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Point-by-point answers to review 2017-10-03

Reviewer: Gregoire Mercier.

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Major comments:

“The aim of the study is to assess the association between primary care and hospitalizations. To that end, the concept of hospitalizations for ambulatory care sensitive conditions has been coined at the end of the 1990s along with various definitions based on lists of diagnosis codes applied to hospital discharge data. The first major issue is that the author did not use any of the existing definition; instead, they regarded all admissions as potentially explained by primary care, which is unfortunately not true. We therefore recommend using one of the existing definitions.”

“Likewise, the existing literature on the topic is not adequately cited, both in the introduction and in the discussion. In a way, the authors did not adequately summarize the available evidence on the topic and put their own work into perspective.”

Answer: These comments and references were appreciated and used when totally revising the paper. References 1, 15, 16 and 21 were added to the paper while 14 and 18 of the former draft were removed.

The choice to use a weighted summary measure of morbidity burden was deliberate. Several definitions of morbidity are associated with clinical management and health outcomes. Multiple diseases within the same person are acknowledged using comorbidity or multimorbidity. Sets of disorders are often used to study potentially avoidable hospital admissions. Morbidity burden is the overall impact of the different diseases in one person taking into account their severity. See manuscript lines 83, 170, 280 and 303. We wanted to study how relationships with primary care
are associated with hospitalisation, to do that we needed to adress multimorbidity and need of care at individual level. To do that, we used Adjusted Clinical Groups (ACGs) to group morbidity burden into levels of need of care which allows for comparing patterns of disorders with the same need for care instead of single disorders.

We are fully aware that primary care neither could prevent all hospitalisation nor that all disorders need hospitalisation. Our focus of interest was the association between relationships with primary care and hospitalisation since healthcare are complex networks where relations are central to the production of health. The multivariate model shows that RUB 0-2 is associated with low hospitalisation. Patients with high need for care reduce hospitalisation more than patients with low need for care. The moderate increase in hospitalisation for RUB 3 is though more interesting to health care.

The second major issue pertains to the statistical method used. Apparently, the authors used data aggregated at the municipality level and thus implemented an ecological-level analysis (see line 170). However this is not clearly stated. If this is the case, they should provide at least the number of municipalities involved in the analysis, their size and characteristics.

Answer: We studied individual data, not aggregated. Municipality reflects factors associated with local societies affecting both hospitalisation and active listing. See line 146 and 184. Statistically we judged that we needed to cluster for that. We revised the paper not to mislead the reader and added to table 1.

Abstract and title “Regarding the main results (i.e. odds for hospital admission and mean days hospitalised), we recommend adding either p-values or 95% confidence intervals.” “We recommend specifying the setting (i.e. Sweden) in the title”:

Answer: Abstract and title was revised. The title is now result orientated and the setting is specified. We prefer confidence intervals, and added that to the abstract.

Manuscript:

Answer: The manuscript was totally revised and expanded. See point-by-point answers below referring to lines of previous draft.

Line 88: Since some patients are actively listed and some others are not, it is important to know what drives a patient's decision to do so. In particular, is there any educational, social, cultural, geographic or economic determinant that might be a confounder in the forthcoming analysis?

Answer: Our previous studies on active listing were not published when this paper was originally submitted. Now we could include them. Morbidity burden, age, sex and geography were important. When morbidity burden was included socioeconomic factors did not contribute to our models. See also previous comment on cluster factor. See line 147 and table 3.
Line 112: The proportion of people excluded for missing data is not clear. Please provide it. Additionally, I would recommend a brief comparison between the people included and the one excluded to check any difference in terms on active listing and hospitalisation.

Answer: We provided number of missing data according to the factors. The total population of 151,731 individuals minus the population < 16 years of age and those missing education level or residence give the study population of 123,168. Within the study population there are no missing factors. See line 112 and following.

Line 131: Please provide references for the conceptual model (Figure 1) and, if possible, refer to already published ones such as Ozegowski S, Sundmacher L. Understanding the gap between need and utilization in outpatient care-the effect of supply-side determinants on regional inequities. Health Policy. 2014 Jan;114(1):54-63.

Answer: The conceptual model is a condensation of the background and a way to state that researchers belong to a society which affects our interpretation of results. We choose to move this to background to avoid repetition. See the beginning of Background. The figure of the conceptual model was removed.

Line 144: The first sentence is incomplete (missing verb).

Lines 144-150: This paragraph should be placed in the conceptual model.

Answer: We revised methods section accordingly, since the conceptual model was removed. See line 126-134.

Line 174: Please explain how the variables entered in the multivariate models were chosen.

Answer: This was stated in first section of Methods. See line 126-147.

Line 187: Please give some descriptive statistics from Table 1 beforehand.

Answer: All results of the descriptive section are from table I.

Tables and Figures:

Table 1: Please add subtitles to make the reading easier. For instance, 'Listing', 'Number of consultations', and so on.

Table 2: Please erase the vertical line.

Answer: Tables and figures were revised and changed. The layout was changed with professional help and subtitles added.
Figure 1 is now a graph of main results instead of a conceptual model. Table 1 was expanded and a model comparison was added as table 3.