Reviewer's report

Title: The impact of asthma, chronic bronchitis and allergic rhinitis on all-cause hospitalizations and limitations in daily activities. A comparative study in adults.

Version: 2
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Reviewer: Orianne Dumas

Reviewer's report:

This paper aims at assessing the socio-economic burden (evaluated by use of hospital services and limitation in daily activities) associated with several chronic respiratory diseases, in a relatively large sample of the general population in Italy. Although this question has been investigated in larger European populations, the more recent and broader estimates presented in this manuscript are of interest. Overall, the methods used and conclusions are appropriate. However, some parts of the manuscript could be clarified, and a few questions need to be addressed.

- Major Compulsory Revisions

1. Methods / disease definitions: the definition used for asthma in this study is relatively sensitive (self-report of the disease during the lifetime with or without a physician's diagnosis, or asthma attacks / use of asthma medication in the last 12 months). In addition, lifetime asthma was studied, while the definition of chronic bronchitis (cough and phlegm on most days at least 3 months a year and for at least two consecutive years), is likely to reflect relatively recent symptoms. This might be of importance when interpreting the differences in the associations with the outcomes (evaluated over the past 3 months only) according to respiratory condition, and especially the results for the contribution of breathing problems to all-cause hospitalization and limitation in daily activities (Figure 3). The higher contribution observed for asthma and chronic bronchitis may partly reflect more recent symptoms in this group compared to the (lifetime, possibly childhood only) asthma only group. The relatively low contribution observed for the asthma only group may also be due to a lack to specificity in the definition of asthma. It would be interesting to see how results vary when considering physician-diagnosed & current asthma.

2. Methods / statistical analyses: Did adjustment for cumulative response rate, season at time of response and type of contact modify the results? If there was no substantial change, it should be mentioned it in the results. If there was a substantial change, unadjusted estimates should be presented as well.

3. Results, first section, second paragraph: the observed risk of 8.8% (age 20-44) and 9.5% (age 45-64) for ED visit or hospital admission in the last 3 months in the general population seems high. Are the authors aware of consistent estimates in other Italian populations, or can they suggest an explanation for
these elevated proportions? What are the risks of ED visit and hospital admission separately?

4. Figure 3: It seems that this analysis is not adjusted for potential confounders such as smoking habits, occupational status or level of outdoor air pollution. Does adjustment for these variables modify the results? Also, it would be useful to have the confidence intervals for the percent contributions, to see if differences according to respiratory conditions are significant.

- Minor Essential Revisions

5. Wording:

- Is the word “hospitalization” used to refer to “use of hospital services” (at least one ED visit and/or one hospital admission) or only to actual hospital admission? If the former, it would be clearer for the readers to use “use of hospital services” instead of “hospitalization” throughout the manuscript.

- The authors use the terms “total burden” or “total socio-economic burden” to refer to use of hospital services and numbers of days with reduced activities due to any health problems, as compared to the “burden” due to breathing problems. Although these terms are defined in the manuscript, “total burden” and “total socio-economic burden” should be used more carefully in key parts of the manuscript as they may be understood as a broader assessment of socio-economic burden (e.g., total economic costs).

- The expression “disease-related contribution” to the total burden / to all-cause hospitalization and limitation in daily activities (e.g. in the abstract or in the title of the last section of the results) is also misleading, since it actually refers to “contribution of breathing problems …”, studied according to specific respiratory condition.

6. Abstract: It would be informative to add the number of participants in each age group (not only response rates).

- Discretionary Revisions

7. Methods / statistical analyses, last paragraph: I would suggest removing “which were fitted as incidence rate ratio” which may be confusing in this context.

8. Methods / Design of the study: the text indicates that “random samples of about 3,000 subjects aged 20-44 and of about 1,000 subjects age 45-64 were selected”. I assume it corresponds to the number of subjects selected in each of the four centers (i.e., total 12,000 and 4,000 respectively), since table 1 indicates respectively 9,739 and 3,480 eligible subjects. But the wording of this method paragraph is confusing and could be clarified.

9. Discussion, title of the first section: “presence of asthma … is a marker of an increase in all-cause hospitalization…”. It is unclear why the word “marker” is used here; “is associated with” seems more appropriate. Same comment applies in the following section, second paragraph: “chronic bronchitis may be a marker
of both disease severity and poor control...”.

10. Discussion, the title of the third section “other determinants of the total burden of asthma, chronic bronchitis, and allergic rhinitis” does not reflect the results discussed in this section, i.e. the associations of socio-demographic characteristics and potential risk factors for respiratory conditions with all-cause “burden” - i.e., not only due to breathing problems. It would actually be interesting to see the associations between these potential determinants of respiratory health and use of hospital services / limitation in daily activities due to breathing problems.

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

**Quality of written English:** Acceptable

**Statistical review:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**

I declare that I have no competing interests