Reviewer's report

Title: Epidemiological and economic burden of metabolic syndrome and its consequences in patients with hypertension in Germany, Spain and Italy; a prevalence-based model.

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Reviewer: Mohan Viswanathan

Reviewer's report:

This study focuses on assessing the economic burden of metabolic syndrome and its consequences in patients with hypertension in three European countries, namely Germany, Spain and Italy in 2008 and 2020.

Comments:

1. Introduction: In this section, the rationale behind the conduction of the study on hypertensive patients with metabolic syndrome should be mentioned in greater detail. The specific reason as to why it is more important to study the epidemiologic and economic burden of MS in patients with hypertension should be stated considering that the other MS components like the lipid parameters and the glucose levels have a more direct role on the development of CVD. For instance the relative risks of other MS components in leading to diabetes and CVD could be compared with that of the relative risk of hypertension.

2. Methods: As this study assesses the Epidemiological burden of MS in hypertensive patients, the actual criteria of #135/85mmHg could have been used. Modifying it to # 140/90 mmHg could have underestimated the actual prevalence of MS.

3. Only two references are provided for the prevalence of type 2 diabetes in the hypertensive population and costs (Ref. 30, 45). Is the prevalence mentioned in these references consistent with that of the other prevalence studies done on the same population?

4. It is mentioned in the methods section that “MS was indicated by the hypertensive individual having at least two other ATP III criteria”. But the ATPIII criterion classifies MS based on the presence of any three of the 5 risk factors. What about the MS patients who are not hypertensive? How is this discrepancy accounted for?

5. As this study is being done in a population with MS, prescription of Lipid lowering drugs like statins, fibrates and other drugs like aspirin that could also bring down the blood pressure of patients(even if not directly) would be common. Considering that this study captures the cost of only antihypertensive medication how was the effect of other drugs on lowering of BP and their implication on the costs associated captured. If the authors consider the probability of such an impact to be nil or minimal, proper justification should be provided for the same.
6. Results: Table 2 mentions only the number of events per 1000. The forecasted rise in the annual costs in percentages should be included in the table which would provide a better perception to the readers. Similarly in Table 1 also, the forecasted rise in the year 2020 should be expressed in percentages.

7. Figure 3. The given title is “Prevalence of MetS in patients with hypertension; 2008 and 2020” but the figure shows the prevalence of individual components of MS in patients with hypertension. This should be corrected.

8. Results: what about the costs associated with the consumption of special diet (low sodium, high saturated fat). Were they considered negligible or was the data not captured?


10. The discussion is too lengthy and can be shortened.

**Level of interest:** An article of outstanding merit and interest in its field

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.