Reviewer’s report

Title: Using U.S. Medicare Records to Evaluate the Indirect Health Effects on Spouses: a Case Study in Alzheimer’s Disease Patients

Version: 2
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Reviewer: Dominique Somme

Reviewer’s report:

This article reports an important and original approach of health consequences of a particular caregiving experience (the one of the spouses) of an AD patient. It is a very well written paper on very sound data, well criticized. The bibliography is appropriate and the length of the paper is adequate.

Nevertheless I have three major compulsory revisions:

1/ The specificity of the AD versus all other possible chronic disease is not discussed. The methodology used selected the “control” group on demographic but not on the fact of being a spouse of a person suffering from a chronic disease. Indeed, in the control group the two “spouses” have very similar profile (Table 4, column 2 and 4). Thus it is impossible to conclude that it is “the AD diagnosis” that produces this impact on health care cost of the spouse rather than any other chronic disease that influence the health care cost of the index person (the difference is huge between column 2 and 3, table 4). In my point of view, this point has to appear in the discussion.

2/ The reader does not have information on the heterogeneity of the groups. My hypothesis is that the variability in comorbidity and expenditures is more important in AD spouses than in “Spouses of matched control” (in relation with heterogeneity of coping) but I am very interested in having more clear idea on that particular point.

3/ I have concerns about the use of the “frailty” (and even more “frailty index”, or “score”, the denomination is not always the same) in the paper. The tool used for the purpose of measuring frailty is not in accordance with the current consensus definition of the concept of frailty. It is more a “comorbidity” measurement (with a mobility dimension) than a “frailty” measurement. For example since the cognitive decline is one of the aspects of the “frailty score”, it is not surprising that the AD patient score is different from other groups in table 4 (it is quite circular). Considering that frailty index is currently used in the literature for another tool related to the consensus definition, I would prefer that the authors used a more appropriate denomination (comorbidity index or another expression). To the less, the authors have to add in the discussion that they do not have information on “frailty” of the spouses notably before the AD diagnosis first appearance in claims. It is possibly a explaining factor of the variability of the health care cost in the AD spouse group.

Level of interest: An article of importance in its field
Quality of written English: Acceptable

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests:
I declare that I have no competing interests