Reviewer's report

Title: Impact of diabetes on hospital admission and length of stay among a general population aged 45 year or more: a record linkage study.

Version: 3 Date: 26 October 2014

Reviewer: Massimo Maurici

Reviewer's report:

Thank you for the opportunity to review this interesting manuscript. The manuscript addresses an area of research rarely analyzed with such a wide and well-implemented data collection.

The purpose is clear and the methods are well described.

This paper refers to a large Australian ongoing study named 45 and Up Study. This is the first study investigating the risk of hospitalization in a particularly group of patients, specifically the ones with diabetes without complications.

Results are relevant for the impact of diabetes on health services, particularly on hospital admissions, using a large-scale population-based study focusing in particular on what are the drivers of higher hospitalization in diabetics.

Since there is an increased prevalence in diagnosed diabetes cases, it seems important to investigate the impact on health services, particularly referred to hospitalization, in timely and relevant way. This knowledge could permit to plan specific preventive intervention finalized to reduce hospitalization in this group of patients. The results of this study, although based on Australian population, could be surely extrapolated in every country which has health services similar to the Australian one.

Given to this context it’s important to note that this study could be of example for analyzing the impact of diabetes towards health services and it may contribute to understand the social determinants of health, and to give valuable indications to policy makers.

The question posed by the authors is well defined and all methods presented here are appropriate. The data, coming from a large and consolidated study, are scientifically sound. The manuscript is well written and adhere to standard internationally recognized.

Major Compulsory Revisions
None

Minor Essential Revisions
Please note the number of the line to which the comment refers
153 It's not clear to me why the survey recruitment was undertaken between
01/01/2006 and 17/02/2010 and data on hospital admissions for participants were from 2000 to 2009. What about follow up data about hospitalization of people recruited from 01/01/2010 to 17/02/2010?

176-177 Some explanation on cut off values used to categorize physiological distress in this study should be given in order to understand the criteria behind this choice (some authors used different cut off)

Same comment for SF-36 physical functioning scale and the reason which has lead the authors to adopt the proposed cut-off values.

191. Some explanation on Australian National Health Service and hospital organization could be useful for non-Australian readers.

193. Explain why you choose to use the reasons for hospitalization instead of diagnosis at discharge. Also explain the reason to analyze APDC records in the 12 months after questionnaire completion

220 To simplify the comprehension of this passage please specify (although the significance became clear in the next page) if “number of days” refers to total number of hospitalization days in 12 months

224-225 Please specify here with appropriate reference what ambulatory care sensitive classification (ACSC) you are referring to [perhaps Ref. 23?]

269-270 Referring to BMI in table 1, it seems that participants with diabetes are more likely to be only obese (and not overweight) compared to those without diabetes (overweight 34% vs 36,8; obese 39,6 vs 19,6 respectively).

271 It seems you have missing the words “compared to” before “those without diabetes”

277-278 It is not clear to me from what data you calculated the RR (1,24). Please clarify or report this result in table 2

315 In “discussion”, note that overweight seems not related with diabetes (see comment to line 269-270)

363-366 Please motivate this result with some hypothesis (e.g. great distance from hospital? People in this area have access to a good health facility reducing hospital admission thanks to a timely outpatient follow-up visits?)

402 It is not clear how physiological changes associated with obesity hypertension and hyperlipidaemia can reduce the risk of hospital admission . Can you explain this results with some example? (e.g. self reporting risk factors could lead to make a mistake in the baseline survey; or people who knows to have this risk factors are pharmacologically treated with consistent reduction of risk of hospitalization. Or that the “non clinical population” here investigated could explain that these risk factors have not already had an effect creating a confounding result).

421-424 This phrase is a little bit confusing to me. The affirmation here seems to
justify the strange result obtained in the study with the current state of knowledge concerning those important risk factors.

427 Please explain the acronym PHC (primary health care) the first time you cite it.

448 You state here that during analysis you try exclude from analysis also elective surgery (in addition to day one admission). Please report it in methods.

463-465 The last sentence is not aligned with the results and the purpose of the study

455 The percentage here reported is not equal to the data reported in line 278

References, Table and figures
Ref. 4 cite correctly. The paper is published in 2014 (International Journal of Clinical Practice Volume 68, Issue 1, pages 40–48, January 2014
Ref. 10 missing year (2012)
Ref. 17,18 and 23 uniform web link across references.
Ref. 19 This voice was often cited with 2 authors (Kessler R, Mroczek D). More, after square bracket there is . and :
Ref. 20: “3” in The SF-36 is missing
Ref. 23 It seems to be missing internet link http://meteor.aihw.gov.au/...
Ref. 24 duplicate voice with Ref 23
Ref. 33 error in a character between 246 and 361 and correct the citation (International Journal of Obesity 37, 790-799 (June 2013). The “doi” appears only in this paper. Uniform with other references.
Ref. 34-38 the year of the papers is missing
Ref. 39 doubled “:”after 13

In table 3 the “% admitted” must be placed under “Diabetes”/”No diabetes” including the the 2 underlying columns .

Figure 1 In the risk factors (sex, low income, anxiety and depression) smoking (cited in discussion in line 406) is missing.

Discretionary Revisions
In table 3 it could be useful to introduce both for Diabetes/No diabetes adj. RR “p value” although it may lead to a table full of data.

Level of interest: An article of importance in its field

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