Reviewer’s report

Title: Predictive risk modelling in the Spanish population: a cross-sectional study

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Reviewer: Amaia Calderón-Larrañaga

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At a time when patients with multiple chronic conditions are the rule rather than the exception and the rational use of health resources is becoming an imperative, the present study pertinently assesses the predictive capacity of three different risk-adjustment systems aimed to identify patients amenable to interventions that improve the efficiency of care. The manuscript is well written and the methodology correctly described.

Minor revisions:

1) The authors analyse the explanatory power of socio-economic variables extracted from 2001 census data and they conclude that inclusion of these variables led to only marginal improvements. Still, the critical impact of socio-economic status both on multimorbidity and health services utilization has been widely described. I would recommend the authors to discuss the limitations of the variable that they employed to measure deprivation in terms of the time elapsed since extraction as well as its ecological nature.

2) In two recent studies, it was stated that the count of chronic diseases (Huntley et al, Ann Fam Med 2012) or prescriptions (Brilleman et al, Fam Pract 2012) showed a predictive capacity almost as high as those derived from proprietary risk adjustment systems which entail important costs to end-users. It would be appreciated if the authors could discuss this stressing the added value of their findings.

3) Within the limitations section, the authors mention that the over-reporting of diagnoses and/or prescriptions should not be a problem as records of primary care tend to suffer from a lack of sensitivity but not specificity. However, it has been suggested that only active diagnostic episodes should be considered for risk-adjustment purposes in order to avoid an artificial amplification of patients’ morbidity burden (Sicras et al, Aten Primaria 2006). The authors may want to add this to the limitations.

4) Another possible limitation could be related to the fact that no split half method was applied, which involves dividing the total sample in two and correlating the results, as an acknowledged way of assessing the reliability of a test (Meenan et al, Med Care 2003; Forrest et al, Am J Manag Care, 2009). The authors may want to comment on this.

5) Many studies have focused on the predictive capacity of risk-adjustment
systems regarding health resource utilization, both in the US and Europe. However, the applicability of such tools for the actual improvement of population health outcomes in public health systems offering universal coverage and with a solid primary health care network has been less frequently evaluated. It would be of high interest if the authors could further elaborate on this issue within the discussion section.

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

**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.