Reviewer's report

Title: Comparison of the Prevalence of Diminished Kidney Function and National Kidney Foundation Diagnosed Chronic Kidney Disease using the Different Estimating equations in a representative sample of the non-institutionalised Irish Population

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Reviewer: Sandra Silveiro

Reviewer's report:

The paper describes the prevalence of chronic kidney disease (CKD) using estimating equations in the Republic of Ireland, comparing the performances of MDRD and CKD-EPI equations, and exploring the association of CKD with socioeconomic parameters. There is a lot of information in the paper, but tables are not friendly, many times repeating and splitting useless data. Traditional description for this kind of study is missing (such as estimation of accuracy, bias and precision). One major concern is the fact that the authors findings are different from the data available from all previous studies, that clearly show that MDRD GFR is systematically lower than CKD-EPI GFR, especially at normal ranges, reducing the classic underestimation of GFR with MDRD equation.

- Major Compulsory Revisions

1. The authors have to present analyses employing kappa statistics to analyze agreement between categories of CKD stage. Results regarding bias between equations and accuracy should be presented (Stevens LA et al. Comparative performance of the CKD Epidemiology Collaboration (CKD-EPI) and the Modification of Diet in Renal Disease (MDRD) study equations for estimating GFR levels above 60 mL # min # 1.73 m2. Am J Kidney Dis 2010; 56: 486–495.). Even though the authors did not employ a GFR reference method, one of the equations has to be assumed to be the reference method (in this case CKD-EPI GFR).

2. Figure 1 adds no information and should be removed.

3. Figure 2 should present limits of agreement (Bland JM, Altman DG. Measuring agreement in method comparison studies. Stat Methods Med Res 1999; 8: 135–160.)

These findings are quite different from all previous studies, that show higher values for CKD-EPI for GFRs in the normal range as compared to MDRD, reducing MDRD underestimation of GFR. Is there any chance that information was switched?

4. Table 2: There is no meaning to present % of albuminurria by GFR stage, and the table would be more clear if population prevalence estimates of CKD replaced ACR %, instead of being presented at the bottom of the table.
5. Table 3 is useless and should be deleted.
6. Does table 4 refer to bias? The authors should make it more clear.
7. Table 5 is difficult to understand - perhaps with another Bland Altman plots it would be easier to demonstrate the bias across GFR stages, one plot by each age strata.
8. Regarding the conclusions, it is well known that MDRD GFRs above 60 mL/min/1.73 m² must not be reported, as largely recommended by international guidelines. It is not therefore a new information, being too obvious to be included as a conclusion of this study. The conclusion about the high prevalence of CKD must include the observation that only individuals older than 45 years were studied. Finally, the conclusion regarding agreement of equations should present misclassification of CKD comparing the equations.

- Minor Essential Revisions
1. The title could be more specific if shortened to “Comparison of the Prevalence of National Kidney Foundation Diagnosed Chronic Kidney Disease using the Different Estimating equations in a representative sample of the non institutionalised Irish Population”.
2. The abstract exceeded the word count (lines 55 and 56 could be removed), and the number of subjects have to be corrected to 1098, which represents the final sample. On the other hand, it was not shown in the abstract if MDRD misclassified CKD as compared to CKD-EPI.
3. In the introduction, the authors should give more information about the statement “isolated serum creatinine levels are difficult to interpret” – for example mentioning the influence of muscle mass on serum creatinine, etc.
4. Aim number 2 is not useful, and could be removed.
5. Why was serum albumin measured? How was urinary albumin measured (method)?
6. Reference style is different from the examples of the BMC Nephrology.
7. The authors have to standardize units of measurement, for example mL/min/1.73 m² Vs. ml/min/1.73 m².

Level of interest: An article of importance in its field

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.