Author's response to reviews

Title: Prevalence and risk factors of chronic kidney disease in urban adults Cameroonian according to three common estimators of the glomerular filtration rate: A cross-sectional study

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Prevalence and risk factors of chronic kidney disease in urban adults Cameroonian according to three common estimators of the glomerular filtration rate: A cross-sectional study
Response to reviewer’s comments

Dear Editor,

We are grateful to the reviewers for their time and important comments on our manuscript. We also appreciate the invitation from the editorial office to submit a revised version of our paper.

The reviewers’ comments and suggestions have been used appropriately to improve the manuscript where relevant. Additions in the revised document are always indicated in a red colour. In addition, we provide below a point-by-point response detailing how we addressed each suggestion from the reviewers.

We look forward to the outcome of your assessment.

For the co-authors,

Dr Kaze

Reviewer’s report: Olivier Moranne

The subject is interesting with a good kidney stated evaluation in this study population. The study need to be published because of scarce data available of CKD prevalence in Sub-Saharan Africa (SSA) countries.

Our answer: Thanks for your appreciation.

The manuscript needs to be rewriting with a medical writer considering the presentation of methods, statistical analysis, results and discussion. For the
English writing too.

Our answer: Thank for this suggestion. We have scanned the manuscript and fixed those language issues identified.

Major comments:

The question posed by the authors is well defined.
Our answer: Thanks for your appreciation.

The methods is appropriate but not well described (In statistical analysis, bivariate and multivariate analysis need to be explained)
Our answer: Thanks for raising this point. We have expanded the sentence on group comparison (otherwise bivariate analysis) to indicate the grouping variables. Multivariable analyses were restricted to age and sex adjusted analysis as already indicted. With the low statistical power we could not afford sound expanded multivariable analysis.

The data sound correct but need to be compared with the litterature in the discussion (especially article from Stanifer JW 2014).
Our answer: The comparison with the article of Stanifer et al was already done on Page 9, lines 15 to 17 as follows “ Our results confirm the already suggested high burden of CKD in SSA setting, with higher prevalence regardless the estimators used, similar to previous individual studies and meta-analysis [9, 11, 14].” With reference 9 corresponding to the article of Stanifer et al. Probably it was not clearly stated, we therefore rephrased this sentence to read: “Our study met the criteria of high quality applied in the meta-analysis by Stanifer et al, and revealed a higher prevalence of CKD in this setting, regardless the estimators used, in line with the findings of the meta-analysis and previous studies in Central and Western Africa region [9,11,14]. These results confirm the already suggested high burden of CKD in SSA setting.”

The figures appear to be genuine but need improvement (p test description group and results (0.00)), the manuscript need to be improve for reporting and data deposition.
Our answer: We can’t quite understand this recommendation, but we feel that we have extensively provided p-values for comparison in the many tables included in the current manuscript.

The discussion are not well balanced and need a strength and limitation section. The association and causality need to be discuss too for determinants of CKD. The bias associated to urban population and inference needs to be discussed. The limitations of the work are insufficiently stated especially the inference for the Sub-Saharan Africa (SSA) countries.

Our answer: There was already a limitation section in the manuscript and which captures most of the suggestions of the reviewer. We have revised and expanded this section as it now reads below: “The present study has some limitations including the semi-quantitative assessment of urinary albumin excretion using dipsticks, the non-validation of any of the equations used in SSA populations and the lack of three months control of positive findings to confirm
the chronicity of renal injury as recommended by the KDIGO guidelines [19]. However, previous studies from Ghana and South Africa have found a high agreement between ethnicity corrected MDRD and CKD-EPI equations, supporting their use in this setting [13,14]. Moreover, by conducting this study in only one urban health district of the country, there is little opportunity of assessing variations in the prevalence of CKD across the gradient of urbanization in the country. Lastly, the study was likely underpowered to reliably investigate the determinants of the disease. However, this study to our knowledge is the first to use a multistage cluster sampling to provide community-based data on the epidemiology of kidney disease in the country with the three estimators of kidney function. The inclusion of participants from a cosmopolite urban health district likely captures the diversity of the national population with our results likely reflecting the national urban prevalence of CKD.”

The association and causality need to be discuss too for determinants of CKD. Our answer: The determinants of CKD observed in this study were discussed already on Page 10, lines 11 to 13. We have now rephrased as it reads below; but we feel very uncomfortable speculating further about causality and association in the context of a cross-sectional study: “Regardless of the estimators used to assess CKD, advanced age, hypertension, diabetes mellitus, adiposity were risk factors of CKD observed in this study as reported elsewhere [4,11-13]. These are well known clinical and socio-demographic risk factors for CKD occurrence and progression to ESRD [19]. Moreover, hypertension and diabetes mellitus are associated with glomerular diseases and constitute the main etiological factors for CKD in SSA [5,6].”

The conclusion is not enough adequately supported by the data. Our answer: We have rephrased the conclusion to read: “This study revealed that more than one in ten participants presented with CKD regardless the estimators used. This sizable prevalence of CKD, similar to those reported in developed countries, is driven essentially by the well-known clinical and socio-demographic risk factors for CKD. Actions are needed both to prevent further increase in the prevalence of CKD and to improve the detection and appropriate management of those with risk factors of the disease.”

The title and abstract accurately convey what has been found but the prevalence doesn't looks like so high. Our answer: Thanks for raising this point. We are probably of a different opinion as we feel that a prevalence of CKD above 10% (if confirmed) in such a young population is definitely a matter of concern.

Other minor comments:

The limitation of the eGFR used in this population needs to be discussed with references about their validation in SSA.

Our answer: This has been mention in the limitations of the study. Please see our answer above

What is the prevalence of excluded patients with positive leucocyturia or nitrites?
Our answer: Seven (1.4%) participants have a positive leucocyturia and nitrites. We included this value as well as for pregnant women in the data collection of methods section on page 6, line 10.

Is the prevalence of diabetes and obesity known in the SSA general population to compare the results?

Our answer: Thanks for raising this point. Diabetes, obesity and hypertension both in Cameroon have been extensively characterised in other reports including by our group, using more robust data (larger sample size and more representative). We don’t feel that cross-sectional study in just about 500 people provide robust arguments for comparison with those other studies in term of prevalence. Please see the following references: Hypertension. 2015 Feb;65(2):291-8; Diabetes Res Clin Pract. 2014 Feb;103(2):197-205; Heart. 2013 Jul;99(14):979-83; Heart. 2013 Aug;99(15):1072-7.

Is the urine sample analysis was done for every patients 2 to 3 weeks after positive dipstick?

Our answer: Thanks for raising this point. Effectively, For any participant with positive dipstick [protein (at least traces), blood, leucocytes]], another urine sample was collected 2 to 3 weeks later to confirm the results as we mentioned already in the data collection of the methods section on page 6, lines 8 to 10.

Reviewer's report: Daniel Teta

In this manuscript, the authors report data on the prevalence of CKD from a relatively large cohort of individuals (n=500) from a cosmopolitan urban area in the economic capital of Cameroon. They show that CKD prevalence is as high as about 10% in a relatively young sample of individuals. They also reported that usual risk factors such as age, hypertension, diabetes and high BMI were significantly associated with CKD.

Our answer: Thanks for your appreciation

The paper reads well. The results may not be very original. However, the methods applied are consistent and well described, the data are credible and clearly presented and their interpretation looks correct.

Our answer: Thanks for your appreciation

However, the sample size may be insufficient to identify other potential risk factors for CKD, representing thus a limitation.

Our answer: Thanks for raising this point. It has now been added to the limitation section

I have raised the following concerns:

1. The study may be underpowered to identify other risk factors for CKD (tobacco, use of street medicine or herbals for instance). How was the sample size calculated beforehand in order for this study to be sufficiently powered?

Our answer: Thanks for raising this point, which we have now acknowledged in the limitation section. The study wasn’t powered for risk factor investigation, which is driven by the number of participants with the outcome of interest (CKD).
As a consequence, the reviewer will appreciate that we refrained from performing expanded multivariable analysis.

2. The authors also use MDRD to estimate eGFR. MDRD has not been validated for eGFR > 60, the majority of individuals from this study. Can the authors justify this use? If not, MDRD estimation of eGFR may be removed from the paper.

Our answer: Thanks for raising this point. We fully agree that none of the estimators usually used has been validated in SSA people. However, previous studies from Ghana and South Africa have found a high agreement between ethnicity corrected MDRD and CKD-EPI equations, supporting their use in this setting [13,14]. While waiting for the development of validated estimators for SSA people, we included it in the limitation section.

3. Minor points and grammatical errors

Prevalence and determinants of chronic kidney disease in urban adult (no s) Cameroonians according to three common estimators of glomerular filtration rate: A cross sectional study.

Our answer: This has been fixed

Page 1 Line 3 and 4

We assessed the prevalence and determinants of CKD among adults in urban Cameroon. Comment. This study remains a cross section study and a causal inference cannot be made. Hence we may suggest using the word "risk factors" and not "determinants" of chronic kidney disease.

Our answer: This has been changed

Page 4 line 12

Ref number (4). This study aimed at examining the role of pre-eclampsia and eclampsia in pregnancy-related mortality. However, it does not mention any information on the prevalence of CKD. Perhaps in the subgroup analysis, but we did not find any figures on prevalence of CKD.

Our answer: Thanks for raising this point. There was an error in the references list. This has been updated. Reference number (4) is: Seck SM, Doupa D, Gueye L, Ba I: Chronic kidney disease epidemiology in northern Senegal: a cross-sectional study. Iran J Kidney Dis 2014, 8(4):286-291.

Page 4 line 19.

Reads « we carried a cross sectional study of two months duration from Mars to April 2013 » Comment: I guess the authors meant ‘March’ instead of "Mars".

Our answer: This has been corrected.

Page 5 Line 11

Final year’s undergraduate medical students collected data from 8 a.m to 12 a.m for participants who provided a written informed consent. Comment: It should read Final year. (Grammatical error.)

Our answer: This has been corrected.
Page 5 Line 22
In every participant we drawn 3ml of whole blood from an antecubital vein…..
Comment: it should read we drew…
Our answer: This has been corrected.
Page 6 line 19. The Albuminuria was classified as ……
Comment/ suggestion: It should read, ‘Albuminuria was classified as’. Without the definitive article ‘The’
Our answer: This has been corrected.
Page 22 table 5
History of goutte Comment: should read ‘History of gout’
Our answer: This has been corrected.
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 interest