Reviewer’s report

Title: The prevalence and mortality of hyponatremia is seriously underestimated in Chinese general medical patients: an observational retrospective study

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Reviewer: Robert MacGinley

Reviewer's report:

Great paper and needs to be published to complete the loop of the serious adverse consequences of a low sodium in this population but needs a lot of work on the writing of teh paper so I have gone through extensive detail

In the conclusion of the abstract - the word challenges is inappropriate and future studies improving prognosis makes no sense (are you suggesting something?) - you have found no challenges - you have describe the incidence of low sodium and its mortality consequences as will as its linkage

Background

Line 52/53 needs to be referenced or combined with next sentence (more sense) and you don't need 9 references for anything! as its well know outside of China and this novelty of doing Chinese patients is lessened - note here is the first time (may need to be in the abstract) that you mention the population is general medicine patients - please put it earlier (even in the title)

Sentence 58/59 makes no sense and needs a re-write

59 - 61 could be stated more simply and not repeat what is above

66-70 - we now get to the point of needing to be reassured that you considered every admission - or sequential admissions - please make that clearer that there is no selection bias

It also is important the mortality comment later to lessen outcome bias but both need to be solid in the methods
Methods

Again it's not clear a general medicine population need to state this - and I think Fig 1 does not help - what is the importance of pregnancy - you would have excluded liver and late stage kidney patients as well - so inclusion and exclusion is the most important thing to get a percentage rate in studies like this - needs to be clearer

Line 78 is the concern of the selection bias so it needs to be changed

80/82 - how many of these situations happened - chronic versus acute hypo Na is a different disease

83-89 should just say Demographics and ICD codes were obtained from medical records

90-94 - why is reference 1 there - you just stating your co-morbidities

95/100 - you describe a small cohort - what were the numbers? and why that time period - selection bias is a common problem when you select a group

109 - should say stratified - not divided

113/114 - not clear what that means - only died in hospital can be clearer if that is your intention and of course the length is then the obvious question

No issues with the simple stats you used to find relationships

137-151 - needs to be more summative and not a series of short statements - use your table more

149-151 - I think J curves and age is not a good way to describe it - its just more prevalent with age - maybe BP or something else - your wide age population is interesting - were there many <50? - thats a rare disease in that age group

154-160 - are you saying there is a correlation? - that may have been more useful than what you reported
173 - should say admission diagnosis or co-morbidity

190 - CCI is not clear to me?

Discussion

I don't mind your summary and novelty paragraph or your paragraph on coding again 239 - tooo many references for a simple point

243-253 could be summarized better

255-257 - a bit repetitive of previous comments

262 - again too many citations

274 THIS is a PROBLEM - you cannot use RCTs to elicit a phenomena of an illness marker - you can do Case control or nested case control studies but it would be unethical to cause hypo Na so an RCT is not appropriate

275-277 - very good point

Other limitations is this bias I have mentioned above in selection, measurement and outcomes (they died the day they left hospital wold not have been counted)
Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

No

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Unable to assess

Are the conclusions drawn adequately supported by the data shown?
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Yes

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