**Reviewer's report**

**Title:** Limited Knowledge of Chronic Kidney Disease Among Primary Care Patients - A Cross-sectional Survey

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**Reviewer:** Varun Agrawal

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Leng et al. “LIMITED KNOWLEDGE OF CHRONIC KIDNEY DISEASE AMONG PRIMARY CARE PATIENTS – A CROSS-SECTIONAL SURVEY”

**Summary:**

This is a cross sectional questionnaire survey of patients without CKD presenting to primary care clinics in Singapore who were questioned re their knowledge of CKD. In particular, the authors surveyed the patients for their knowledge on anatomy, function of kidney, risk factors for CKD, presenting symptoms, treatment of CKD, dialysis options, transplant as a treatment for renal failure. The authors identified lack of knowledge with certain themes and also found that the patients who were elderly and had low socioeconomic status had the lowest knowledge score. While, patient knowledge and awareness of CKD is certainly important, I have major concerns re the methodology and survey design in the study. Also, the finding of low level of knowledge with lower socioeconomic status is not novel.

**Major Comments**

1) **Sampling:** The authors studied a convenience sample of primary care pts who did not have CKD. Firstly, how were they chosen? Were they approached by the primary care doctors or other staff to answer the survey? Was this done in the clinic? Was this a paper or electronic survey? Is it possible that the results are not generalizable and may be worse in the general population as this was a convenience sample and that the patients most motivated in their self-care may have volunteered to participate. This constitutes a selection bias and needs to be stated.

Did the participants have DM or HTN? Why did they come to the primary care clinic? Was this an urgent care clinic?

The authors state that pts with CKD, dialysis or txp were excluded. How was this assessment made during participant recruitment? If the presence off CKD, dialysis or txp was based on self report, what was the exact question asked to the participants.

The authors mention different nationalities such as Chinese, Malay and Indian among the study participants. Was there a language barrier? If so, was the
patient excluded from the study or was a different language used for the questionnaire.

Were answers to the survey given to the patient at the end of the study? Were there any financial incentives offered to participate in the study?

2) Measures:
The questions and responses were chosen subjectively. In any questionnaire survey, it is important to establish content validity/face validity - how was this done? Were nephrologists involved in the development of this questionnaire? Also, the authors need to state the reason for the choice of the themes - why is it important for a patient to know how many kidneys one needs to lead a normal life? Is this to improve awareness that a person can donate a kidney if he/she has two healthy kidneys? Can it give the wrong impression to some that two kidneys are absolutely needed to lead a normal life?

The survey was designed as a single response type. However, some questions can have many right answers.

For example - Que 3: the right answers can be only HTN, only DM, HTN and DM. If a participant knows that HTN and DM cause CKD, then by default he/she will choose ‘all of the above’ even if he/she does not know that inherited conditions can cause CKD. In Que 4: People who know that any urine abnormalities such as bubbles or blood can cause CKD will choose ‘all of the above’ even if they don’t know that CKD is asymptomatic in many. How did the authors resolve this difference in responses.

Some answer responses are ambiguous. For example - Que 5. When trying to state that kidney disease can be prevented, it is true that it is difficult to prevent CKD.. While nephrology practice is commonly about slowing decline in renal function, certainly this is something a patient should know. Whether ‘CKD can be cured with medications’ is not stated clearly as certainly glomerulonephritis can be treated with favorable outcomes. Also, I dont think its fair to ask patients to choose the incorrect response - this is not a test, this is a survey and should not be confusing for the respondent.

Re Que 6. The authors need to argue why it is important for a non-CKD patient to know where dialysis is provided.

Re Que 7. All responses are right and appropriate based on the patient preference. An elderly patient with other comorbidities may choose medical therapy/palliative care if he/she develops renal failure. Dialysis or txp would not be right options in that pt.

3) Bias:
Self selection bias as above needs to be clarified.

4) Analysis:
Assessing participant knowledge based on the total score is not needed as the
subjects were tested on different themes with varying degrees of importance. They may have good knowledge of anatomy, function or treatment, but this information is of no use if they don’t know the presenting features and prognosis of CKD. A bar graph showing the performance of the participants in each theme (rather than the number of right answers) will be more informative.

The authors need to state why they included marital status, religion and presence of children as independent variables in their regression model.

5) Importance:
The authors have rightly stated that it is important to assess patient knowledge of kidney disease, even among those without CKD. However, the numerous flaws with the design of the survey questionnaire as above make it difficult to support the conclusion that CKD knowledge is poor.

Minor Comments

1) Discussion. The authors need to discuss methods/interventions to improve patient knowledge of CKD.

2) Results: Most of the percentages in the results section seem to be rounded figures. Pls clarify and report decimal points..

Under Results ‘Respondent’s knowledge on chronic kidney disease’ paragraph 2: “80 (6%) of the respondents had no knowledge of kidney disease.” Does this mean that 6% of the participants scored zero. Pls clarify.

**Level of interest:** An article of limited interest

**Quality of written English:** Needs some language corrections before being published

**Statistical review:** Yes, and I have assessed the statistics in my report.