PEER REVIEW HISTORY

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ARTICLE DETAILS

TITLE (PROVISIONAL)	Factors associated with patient activation in an Australian population with comorbid diabetes and chronic kidney disease: a cross sectional study
AUTHORS	Zimbudzi, Edward; Lo, Clement; Ranasinha, Sanjeeva; Fulcher, Gregory; Jan, Stephen; Kerr, Peter; Polkinghorne, Kevin; Russell, Grant; Walker, Rowan; Zoungas, Sophia

VERSION 1 – REVIEW

REVIEWER	Michelle L. Johnson, PhD, RN Bryan College of Health Sciences Lincoln, Nebraska, USA The reviewer declares no competing interests.
REVIEW RETURNED	04-Jun-2017

GENERAL COMMENTS	Abstract Setting: Across Australia, or in a region? Results: Do not begin a sentence with a number, use text only. Study population: Define “adult” status. It is different across the world. Conclusion: Tighten up the statements. The first statement is somewhat misleading. Introduction Line 10: Sentence is confusing, consider: Previous studies of hypertensive patients in primary care settings suggest that patient activation is associated with patient outcomes, where low activated patients were more likely to smoke…” Line 32: Sentence is confusing…not sure what point you are making. Is low activation in 25-40% of the general population living with chronic disease? If so, tease out the statistic and list a few examples. P. 4, lines 36-45 & P. 5. Lines 3-5: Excellent statement for setting the significance of your study. Add your research question(s) following the purpose statement. Methods P. 5, line 34: Is the larger study published where readers may refer to the methodology to better understand the sample, setting, and procedure? Line 47: I question combining stages 3&4 with stage 5. What is your rationale? The self-management for the kidney failure differs from CKD. Was the inclusion criterion CKD stage 5 on dialysis, or not on dialysis? P. 6, line 5: Provide examples of “standarised procedures”…, such as

	Demographic and clinical variables P. 6 lines 37-41: It would benefit your readers' understanding of CKD staging to either provide more information via text, or better yet, via a table. The eGFR requires further explanation. How did you settle on the CKD-EPI formula and not the MDRD formula? Patient Activation P. 7, lines 13-17: Challenging sentence structure that contains repetitive information, revise. P. 7, lines 17+: Readers of research look for reliability and validity of instruments used to collect data; thus, you need to include the information with each instrument used. With the PAM-13 you have made reference only to the R&V of the original PAM-22, you need to include the information, and then cite the source. P. 7, line 31: …Hibbard and colleagues. Established Instruments for Data Collection Diabetes Renal Project Survey, PAM-13, and Kidney Disease Quality of Life short form (36 items) need to have the reliability and validity (psychometric properties) shared for your readers' benefit, to assist them with making educated decisions of your results based on your methodology, including the instruments you used to collect data. Data Analysis P. 8, line 7: the sentence is confusing. Was the overall alpha set at $p < .05$, with the associated alpha of covariates at $p < .10$? Need to revise this section and clearly delineate the processes. (Line 16 & 17): Not sure if the $p < .05$ is solely related to the C.I.s, or the overall alpha setting a priori. P. 8, lines 16-18: Please elaborate on the use of two separate statistical software packages. *Need information on how you handled missing data. Results p. 8, line 35: Reads as the only missing data was with 3 patients, out of 305 patients, who did not complete the PAM-13 in full. I find this hard to believe, but simply wonderful if it is true! P. 8, line 42: I am still not clear on how you are defining CKD stage 5: Are you using pre-dialysis patients, or dialysis patients? Mixing the two would be inappropriate, plus I question having stage 5 studied and statistically analyze with stages 3&4. This is especially true due to the percent receiving dialysis. Does the 20% represent all patients in CKD stage 5? Table 1 does not answer my question, either. P. 8, lines 47-54: As a reader, I am wanting to know which level of PA is each of the three means listed. Figure 1 is not all that helpful, so perhaps your state the level of PA and provide the explanation in a small box, or provide the information in the methods section when discussing the instrument. P. 9, lines 3-7: I am looking for more information, supported by numbers from your statistical findings. P. 9, lines 17-29: I am not following your use of low and high activation in the text, and referring me to Table 2, where you are using the word "activation". The word "activation" makes me think of levels 3 & 4. Restructure this paragraph to be more descriptive with your meanings. This comment holds for the use of "activation" with Tables S1 & S2.

	P. 9, line 42: break up the information between the sexes by placing a period after men. The same is true with line 48. Combining the information makes the read confusing. Discussion P. 10, line 21: Separate the sexes here, too. It is a good comparison and makes the read easier when the two are separate statements. P. 10, line 23: As a reader, I want to know some examples of "symptoms problems" for women, who are less activated in their health care and who have worse kidney function. P. 10, lines 31-40: Show your readers the comparative means and standard deviations in parentheses. I do not know how to interpret the findings myself without having the comparative means and SDs present. P. 10, lines 40-49: The statements are confusing! This is what I make of it from what I know regarding PA and self-management: there is an association with self-management of chronic disease and PA, where activated patients are more likely to be involved in the daily management of their health care. What does this mean for sustaining self-management of chronic disease over time? P. 10, lines 52-P.11, line 7: I am looking for your explanation of why older patients are less activated. Line 7 launches into a comparison with younger aged patients being less activated. How does this support your findings of older patients being less activated? P. 11, line 14: I am looking for examples of "targeted interventions". P. 11, lines 14-21: "…based on knowledge…" This is confusing because PA is defined as knowledge, skills and confidence. Managing chronic disease extends far beyond having knowledge only. P. 11, line 33: Why would men have less ability to cope with their chronic diseases then women? P 11, lines 42-47: You did not make a link to low kidney function, less physical activity and low PA with this statement. Revise and make your case. P. 11, line 52: Build on the case of caregiver stress and fatigue in women in order to make your association. The link does not stand as written. Strengths & Limitations P.12, line 22: Provide some examples of the factors. Self-reported responses on instruments (surveys) used for data collection, is always a limitation to a study. Convenience samples are limitations, too as they reduce the ability to generalize results to the greater patient population. Authors, I am so pleased to see that you are addressing the gap in evidence with CKD self-management and PA. You have a good start, but really need to sharpen your writing to make it more scientific with your associations. I hope you are able to make edits and resubmit your work. Best to you!

REVIEWER	Eindra Aung St Vincent's Clinical School, University of New South Wales, Australia
REVIEW RETURNED	26-Jun-2017

GENERAL COMMENTS	2. Abstract: Timeframe is not stated in the abstract. 4. Methods: It is not stated in the methods how self-care scores were obtained. 7. Statistics: It is not clear which covariates were included in the multivariable model. These covariates should be explicitly stated in the methods section and the relevant tables or table-footnotes. 13. STROBE statement: There is no explanation on how the sample size was calculated. Information on timeframe for the study should include which month in 2013 the survey started (Page 5, Line 43). It is not clear how many patients with comorbid diabetes and CKD were identified in the participating clinics during the study period. Overall, this manuscript is well-organized. However, I would like to suggest: 1. Providing a brief description of the content of the Diabetes Renal Project Survey the patients were asked to complete (Page 5, Line 54). Only the doctors survey was provided with the manuscript. 2. Indicating from which sources demographic and clinical data were obtained (Page 6, Line 18). 3. Checking why SF-36 is in the methods (Page 7, Line 1). 4. Stating in the results section the percentage for each of the 4 activation levels. 5. Rephrasing the statement: : "The attenuating effect of diabetes on patient activation" in contrast to "patient self-management in diabetes fostering greater patient activation" (Page 10, Line 40). 6. Considering the concordant and discordant nature of comorbidities in the discussion. The following papers may be useful: Piette JD, Kerr EA. The impact of comorbid chronic conditions on diabetes care. Diabetes Care, 2006; 29: 725–731 Fraser SD and Taal MW. Multimorbidity in people with chronic kidney disease: implications for outcomes and treatment. Curr Opin Nephrol Hypertens; 2016 Nov;25(6):465-472. 7. Stating in tables or table footnotes how SES is determined (i.e., IRSD). 8. Checking why self-care composite score is not in Table S1. 9. Checking in table whether it is "health weight" or "healthy weight". I am interested to know whether the authors have considered or would consider: 1. Exploring the association between patient activation and the number of comorbidities (and/or comorbidity index) in this study population; and including these variables in the regression model. It would be interesting to see whether (or how) having other comorbid conditions (especially mental health disorders) affects patient activation in this study. Are these data available? 2. Interactions in the regression models 3. That it can be both ways ("be due to" as well as "lead to") regarding poor coping strategies and low activation (Page 11, Line 10).

VERSION 1 – AUTHOR RESPONSE

Reviewer: 1
Abstract

Reviewer's comment
Setting: Across Australia, or in a region?

Authors' response;
Across the 2 largest states of Australia

Reviewer's comment
Results: Do not begin a sentence with a number, use text only.

Authors' response
Changed to, "Three hundred and five…"

Reviewer's comment
Study population: Define "adult" status. It is different across the world.

Authors' response
Population defined, "over 18 years"

Reviewers' comment
Conclusion: Tighten up the statements. The first statement is somewhat misleading.

Authors' response
First sentence in conclusion changed to, "Findings from this study suggest that levels of activation are low in patients with diabetes and CKD.

Introduction

Reviewer's comment
Line 10: Sentence is confusing, consider: Previous studies of hypertensive patients in primary care settings suggest that patient activation is associated with patient outcomes, where low activated patients were more likely to smoke…"

Authors' response
The sentence has been amended to read, "Previous studies of hypertensive patients in primary care settings suggest that patient activation is associated with patient outcomes, where low activated patients are more likely to smoke …"

Reviewer's comment
Line 32: Sentence is confusing…not sure what point you are making. Is low activation in 25-40% of the general population living with chronic disease? If so, tease out the statistic and list a few examples.

Authors' response
The sentence has been amended to read, "Low activation levels have been reported in people living with chronic diseases and activation levels may vary considerably depending on the severity of the chronic disease."

Reviewer's comment
P. 4, lines 36-45 & P. 5. Lines 3-5: Excellent statement for setting the significance of your study. Add your research question(s) following the purpose statement.

Authors' response
The purpose of the study has been reworded to more clearly convey the research questions of this study.
"Consequently, the purpose of the present study was to 1) examine to what degree patients with co-morbid diabetes and CKD are activated and 2) identify what modifiable risk factors are independently associated with activation levels in patients with co-morbid diabetes and CKD."

Methods
Reviewer's comment
P. 5, line 34: Is there larger study published where readers may refer to the methodology to better understand the sample, setting, and procedure?

Authors' response
A reference has been inserted to provide more detail on the sample "Lo C, Ilic D, Teede H, et al. The Perspectives of Patients on Health-Care for Co-Morbid Diabetes and Chronic Kidney Disease: A Qualitative Study. PloS one. 2016; 11(1):e0146615"

Reviewer's comment
Line 47: I question combining stages 3&4 with stage 5. What is your rationale? The self-management for the kidney failure differs from CKD. Was the inclusion criterion CKD stage 5 on dialysis, or not on dialysis?

Authors' response
The rationale for including stages 3 and 4 with 5 in this study was to explore if the factors associated with patient activation differed between CKD stages inclusive of CKD stage 5. The inclusion criteria was CKD stage 5 on dialysis and not on dialysis.

Reviewer's comment
P. 6, line 5: Provide examples of "standardised procedures"…, such as

Author's response
The sentence has been amended to read, "For each patient the site study staff or the clinician, using standardised procedures that included health assessment templates, also completed a corresponding clinical survey."

Demographic and clinical variables
Reviewer's comment
P. 6 lines 37-41: It would benefit your readers' understanding of CKD staging to either provide more information via text, or better yet, via a table. The eGFR requires further explanation. How did you settle on the CKD-EPI formula and not the MDRD formula?

Authors' comments:
The following additions have been made;
"eGFR was calculated using the CKD Epi formula GFR = 141 X min (Scr/κ, 1) α X max (Scr/κ, 1)-1.209 X 0.993Age X 1.018 X 1.159 where Scr is serum creatinine (mg/dL), κ is 0.7 for females and 0.9 for males, α is –0.329 for females and –0.411 for males, min indicates the minimum of Scr/κ or 1,

and max indicates the maximum of Scr/κ or 1. [29] We used the CKD Epi formula because it is routinely reported in Australia [30] as the equation of choice and is recommended by the Kidney Disease, Improving Global Outcomes (KDIGO) guidelines." [31]

Patient Activation
Reviewer's comments
P. 7, lines 13-17: Challenging sentence structure that contains repetitive information, revise.

Authors' response
The sentence has been rephrased to read, "Based on the patient activation score, patients were categorized into four levels: level 1 (score <47.0), level 2 (score 47.1–55.1), level 3 (score 55.2–67.0), and level 4 (score >67.0)." [40]

Reviewer's comment
P. 7, lines 17+: Readers of research look for reliability and validity of instruments used to collect data; thus, you need to include the information with each instrument used. With the PAM-13, you have made reference only to the R&V of the original PAM-22, you need to include the information, and then cite the source.
P. 7, line 31: …Hibbard and colleagues.

Authors' response
The following sentence and citations have been added, "The validity and reliability of the PAM-13 have also been tested in various regions and in patients with different conditions." [41-44]

Established Instruments for Data Collection
Reviewer's comment
Diabetes Renal Project Survey, PAM-13, and Kidney Disease Quality of Life short form (36 items) need to have the reliability and validity (psychometric properties) shared for your readers' benefit, to assist them with making educated decisions of your results based on your methodology, including the instruments you used to collect data.

Authors' response
The psychometric properties of the PAM-13 [41-44] and Kidney Disease Quality of Life short form (36 items) [37-39] have been widely reported previously. The Diabetes Project Survey mainly collected demographic and clinical data and in this regard did not warrant psychometric testing.

Data Analysis
Reviewer's comment
P. 8, line 7: the sentence is confusing. Was the overall alpha set at $p < .05$, with the associated alpha of covariates at $p < .10$? Need to revise this section and clearly delineate the processes. (Line 16 & 17): Not sure if the $p < .05$ is solely related to the C.I.s, or the overall alpha setting a priori.

Authors' response
The following amendment has been made, "Confidence intervals (CIs) were reported at the 95% level and for all analyses, a p value <0.05 was considered statistically significant".
(A $p<0.10$ was used to select covariates for the multivariable models).

Reviewer's comment
P. 8, lines 16-18: Please elaborate on the use of two separate statistical software packages.
Authors' response
The main analysis was carried out on Stata and SPSS was used to produce graphs.

Reviewer's comment
Need information on how you handled missing data.

Authors' response
The following sentences have been added in the data analysis section, "Cases with missing values were not included in the analyses after checking for the amount of missing data (the rate of missing data was minimal to result in any substantial loss of statistical power, <1% for some variables). There was no pattern in the missing data on any variables."

Results
Reviewer's comment
p. 8, line 35: Reads as the only missing data was with 3 patients, out of 305 patients, who did not complete the PAM-13 in full. I find this hard to believe, but simply wonderful if it is true!

Authors' response
We believe this was the case because the questionnaires where carefully administered to patients by research staff who had been provided with standardised training in survey conduct.

Reviewer's comment
P. 8, line 42: I am still not clear on how you are defining CKD stage 5: Are you using pre-dialysis patients, or dialysis patients? Mixing the two would be inappropriate, plus I question having stage 5 studied and statistically analyze with stages 3&4. This is especially true due to the percent receiving dialysis. Does the 20% represent all patients in CKD stage 5? Table 1 does not answer my question, either.

Authors' response
CKD stage 5 included 80 patients (59 on dialysis and 21 who were not on dialysis). Due to small numbers of participants not on dialysis, non-dialysis and dialysis patients were analysed together. Table 1 has been amended (footnote) to indicate that stage 5 CKD included patients on dialysis.

Reviewer's comments
P. 8, lines 47-54: As a reader, I am wanting to know which level of PA is each of the three means listed. Figure 1 is not all that helpful, so perhaps your state the level of PA and provide the explanation in a small box, or provide the information in the methods section when discussing the instrument.

Authors' response
A new figure has been added, Figure 1. The original Figure 1 is now labelled Figure 2.

Reviewer's comment
P. 9, lines 3-7: I am looking for more information, supported by numbers from your statistical findings.

Authors' response
The following addition has been made, "as shown in Table 1"

Reviewer's comment
P. 9, lines 17-29: I am not following your use of low and high activation in the text, and referring me to Table 2, where you are using the word "activation". The word "activation" makes me think of levels 3 & 4. Restructure this paragraph to be more descriptive with your meanings. This comment holds for the use of "activation" with Tables S1 & S2.

Authors' response
Tables 2, S1 and S2 (now S2 and S3) have been amended to reflect that they are showing univariable and multivariable regression models for factors associated with low activation PAM Levels 1 and 2).

Reviewer's comment
P. 9, line 42: break up the information between the sexes by placing a period after men. The same is true with line 48. Combining the information makes the read confusing.

Authors' response
The sentences have been split to read, "On univariable analysis, worse self-reported health in the symptom problems list, burden of kidney disease, mental composite summary subscales and lower self-care scores were associated with lower activation in men. Worse self-reported health in all HRQOL subscales and lower eGFR were associated with lower activation in women."

Discussion
Reviewer's comment
P. 10, line 21: Separate the sexes here, too. It is a good comparison and makes the read easier when the two are separate statements.

Authors' response
The sentences have been split to read, "In men, worse self-reported health in the mental composite subscale was associated with lower activation. In women worse self-reported health in the symptom problem list and greater renal impairment were associated with lower patient activation."

Reviewer's comment
P. 10, line 23: As a reader, I want to know some examples of "symptoms problems" for women, who are less activated in their health care and who have worse kidney function.

Authors' response
The following sentence has been rephrased, "In women worse self-reported health in the symptom problem list (with symptoms including sore muscles, chest pain, cramps, itchy or dry skin and shortness of breath, faintness/dizziness, and lack of appetite) and greater renal impairment were associated with lower patient activation."

Reviewer's comment
P. 10, lines 31-40: Show your readers the comparative means and standard deviations in parentheses. I do not know how to interpret the findings myself without having the comparative means and SDs present.

Authors' response
The following sentence has been added, "The mean patient activation level was 57.6 on a theoretical scale of 0–100 and was comparable to the means cited in several studies across other regions and disease conditions." [15, 41, 48]

Reviewer's comment
P. 10, lines 40-49: The statements are confusing! This is what I make of it from what I know regarding PA and self-management: there is an association with self-management of chronic disease and PA, where activated patients are more likely to be involved in the daily management of their health care. What does this mean for sustaining self-management of chronic disease over time?

Authors' response
The statements above have been rephrased to read, "Although we expected that diabetes and CKD in combination would lead to lower activation compared to either diabetes or CKD alone, our results suggest an improvement in patient activation among patients with diabetes and CKD. This may be attributed a focus on self-management in diabetes management."

Reviewer's comment
P. 10, lines 52-P.11, line 7: I am looking for your explanation of why older patients are less activated. Line 7 launches into a comparison with younger aged patients being less activated. How does this support your findings of older patients being less activated?

Authors' response
The following explanation has been provided, "The reason for this could be a higher prevalence of depressive symptoms and functional difficulties impairing self-management in older patients." [50, 51]

Reviewer's comment
P. 11, line 14: I am looking for examples of "targeted interventions".

Authors' response
The following sentence has been added, "These interventions may include encouraging younger patients to ask questions [58] when they attend medical appointments and training their peers to lead such interventions." [59]

Reviewer's comment
P. 11, lines 14-21: "…based on knowledge…" This is confusing because PA is defined as knowledge, skills and confidence. Managing chronic disease extends far beyond having knowledge only.

Authors' response
'Knowledge' here is not used in the context of patient activation, but it is focusing on the evidence health professionals have of other modifiable factors that may contribute to lower activation apart from demographic factors such as age.

Reviewer's comment
P. 11, line 33: Why would men have less ability to cope with their chronic diseases then women?

Authors' response
The following sentence has been added, "Men with chronic disease may also have less coping ability because they do not seek help as often as women do." [64]

Reviewer's comment
P 11, lines 42-47: You did not make a link to low kidney function, less physical activity and low PA with this statement. Revise and make your case.

Authors' comment
The sentence has been amended to read, "The most likely explanation for this is that women tend to have lower physical functioning [66, 67] which is associated with lower patient activation [62] even in the early stages of CKD." [17, 53]

Reviewer's comment
P. 11, line 52: Build on the case of caregiver stress and fatigue in women in order to make your association. The link does not stand as written.

Authors' comment
The following sentence has been added, "The lack of support in managing chronic diseases may lead to lower activation among women".

Strengths & Limitations
P.12, line 22: Provide some examples of the factors.

Author's response: The sentence has been amended to read, "The strengths include the inclusion of several biologic and non-biological patient variables such as gender, age, SES, HRQoL, BMI and disease duration as potential factors influencing patient activation since the determinants are likely to be multifactorial".

Reviewer 2
Review Checklist
2. Abstract: Time-frame is not stated in the abstract.

Authors' response
The time-frame has been added to read, "Patients completed the Patient Activation Measure, the Kidney Disease Quality of Life and demographic and clinical data survey from January to December 2014."

4. Methods: It is not stated in the methods how self-care scores were obtained.

Authors' response
A paragraph has been added to the methods section to explain how self-care scores were obtained, "Self-care was assessed by the SDSCA questionnaire [32], which is a self-report measure of how often participants performed diabetes self-care activities. The SDSCA questionnaire has been utilised in several studies and settings and is considered to be reliable, valid, and sensitive [33-35] in assessing self-care among adults with diabetes. This study used a version of the SDSCA questionnaire that included items assessing five domains of diabetes self-management which are; general diet (2 items), specific diet (2 items), exercise (2 items), blood glucose testing (2 items), and foot care (2 items) [32]. The medication self-management domain was excluded because of its ceiling effects and lack of variability among participants [32]. The smoking self-management domain was also excluded because smoking behaviour was relevant to smokers only."
Supplementary Appendix 5, Summary of Diabetes Self-Care Activities (SDSCA) questionnaire has also been added.

7. Statistics: It is not clear which covariates were included in the multivariable model. These covariates should be explicitly stated in the methods section and the relevant tables or table-footnotes.

Authors' response
The following addition has been made to the methods section (statistical analysis), "Potential covariates were age, gender, subscales of HRQoL, eGFR, body mass index, socio-economic status (SES) and the composite self-care score."

13. STROBE statement: There is no explanation on how the sample size was calculated.

Authors' response
Formal power analysis was not deemed necessary for the exploratory outcome reported in this study i.e. patient activation.

Information on time-frame for the study should include which month in 2013 the survey started (Page 5, Line 43).
A typographical error. The time frame for the study has been clarified to read, "…from January to December 2014"

It is not clear how many patients with comorbid diabetes and CKD were identified in the participating clinics during the study period.
The following paragraph has been added in the results section and a new Figure (Fig 1) "A total of 3028 patients were screened, 317 studied and of those 305 included in the analyses after the exclusion of 9 patients who had their eGFR misclassified (>60ml/min/m2) and 3 patients who had incomplete PAM data.

1. Providing a brief description of the content of the Diabetes Renal Project Survey the patients were asked to complete (Page 5, Line 54). Only the doctor's survey was provided with the manuscript.

Authors' response
The following description of the Diabetes Renal Project (Patient Survey) has been provided, "The Diabetes Renal Project (Patient Survey) collected demographic information (age, gender, country of birth, language spoken at home) and clinical characteristics such as duration of diabetes and CKD."

Reviewer's comment
2.Indicating from which sources demographic and clinical data were obtained (Page 6, Line 18).

Authors' response
They were obtained from The Diabetes Renal Project (Patient Survey), as above.

Reviewer's comment
3. Checking why SF-36 is in the methods (Page 7, Line 1).

Authors' response
A typographical error. This has been removed from the methods section.

Reviewer's comment
4. Stating in the results section the percentage for each of the 4 activation levels.

Author's response
The following addition has been made, "Twenty-two percent of patients were categorised as having level 1 PA, 23.6% level 2 PA, 36.4% level 3 PA and 18% level 4 PA (indicating greatest activation) (Figure 2)."

Reviewer's comment
5. Rephrasing the statement: "The attenuating effect of diabetes on patient activation" in contrast to "patient self-management in diabetes fostering greater patient activation" (Page 10, Line 40).

Authors' response
We have rephrased the sentence to read, "Although we expected that diabetes and CKD in combination would lead to lower activation compared to either diabetes or CKD alone, our results suggest an improvement in patient activation among patients with diabetes and CKD. This may be attributed to a focus on self-management of diabetes."

6. Considering the concordant and discordant nature of comorbidities in the discussion.
The following papers may be useful:
Piette JD, Kerr EA. The impact of comorbid chronic conditions on diabetes care. Diabetes Care, 2006; 29: 725–731
Fraser SD and Taal MW. Multimorbidity in people with chronic kidney disease: implications for outcomes and treatment. Curr Opin Nephrol Hypertens; 2016 Nov; 25(6):465-472.

Author's response:The following sentence has been added utilising the reference provided, "Additionally, due to the complexity of diabetes and CKD, there is limited time to address all patient needs resulting in lower quality medical care for discordant conditions."

Reviewer's comment
7. Stating in tables or table footnotes how SES is determined (i.e., IRSD).

Authors' response
The following statement has been added in Tables, "Socio-economic status was estimated using the Australian Bureau of Statistics data. Postcodes were coded according to the Index of Relative Social Disadvantage (IRSD), a composite measure based on selected census variables, which include income, educational attainment and employment status.

Reviewer's comment
8. Checking why self-care composite score is not in Table S1."

Authors' response
The following addition has been made to Table S1 now S2, "Self-care composite score 0.21 (0.01 to 0.40)*"

Reviewer's comment
9. Checking in table whether it is "health weight" or "healthy weight".

Authors' response
A change has been made in Tables from 'health weight' to 'healthy weight'

I am interested to know whether the authors have considered or would consider:
1. Exploring the association between patient activation and the number of comorbidities (and/or comorbidity index) in this study population; and including these variables in the regression model. It would be interesting to see whether (or how) having other comorbid conditions (especially mental health disorders) affects patient activation in this study. Are these data available?

Authors' response
The data is available and this analysis is being considered in another paper.

2. Interactions in the regression models

Authors' response
We did not observe any interactions in the regression models

3.That it can be both ways ("be due to" as well as "lead to") regarding poor coping strategies and low activation (Page 11, Line 10).

Authors' response
We are uncertain of the direction of causality hence the following paragraph in the discussion, "The cross sectional design of the study did not permit assessment of temporal effects or the potential for reverse causality with low activation causing poor health. Longitudinal studies are needed to better understand the effects over time of factors influencing patient activation in this population."

Changes to List of Tables, Figures, supplementary Tables and Supplementary Appendices:

Table 1: Patient characteristics by activation status (N=305)
Table 2: Univariable and multivariable regression model for factors associated with low activation in the study population
Figure 1: Patient inclusion flow diagram
Figure 2: Patient activation. Distribution of patient activation and quantile-quantile (Q-Q) plots from the study population (A and B), men (C and D) and women participants (E and F)
Figure 3: Distribution of participants across the four levels of patient activation.
S1: Characteristics of patients who did and did not participate in the study at one hospital site
S2: Univariable and multivariable regression model for factors associated with low activation in men with diabetes and chronic kidney disease
S3: Univariable and multivariable regression model for factors associated with low activation in women with diabetes and chronic kidney disease
Supplementary Appendix 1- Diabetes Renal Project (Patient Survey),
Supplementary Appendix 2-Diabetes Renal Project (Doctors Survey)
Supplementary Appendix 3-Patient Activation Measure (PAM-13)
Supplementary Appendix 4-Kidney Disease Quality of Life short form (KDQoL TM -36)
Supplementary Appendix 5- Summary of Diabetes Self-Care Activities (SDSCA)

VERSION 2 – REVIEW

REVIEWER	Michelle L. Johnson, PhD, RN Bryan College of Health Sciences Lincoln, Nebraska, USA
REVIEW RETURNED	14-Aug-2017

GENERAL COMMENTS	Abstract: Results - Line 25: Define IQR first before using the acronym Methods Self-Care – Line 24: Good information, but need to include psychometric info. Patient Activation – Line 13: Would like to see psychometric info here, too. Data Analysis Line 30: provide examples of "some variables" Results Patient Characteristics – Line 45: type out the word three per APA format; adhere to this criterion throughout the paper (numbers < 10 are written) p. 69, line 12+: Rewrite the data with consistent use of punctuation; missing datum for level 3. Discussion: P. 70, line 45: include what level of PA is: 57.6 to enhance readers' understanding.

REVIEWER	Eindra Aung University of New South Wales, Australia
REVIEW RETURNED	14-Aug-2017

GENERAL COMMENTS	The authors have addressed my concerns to a large extent. I have some minor comments for improvement during the review of the revised manuscript as follows: FIGURE 1: 2nd box - “either comorbid diabetes or chronic kidney disease”: “Comorbid” in this phrase is confusing. It would read better as “either diabetes or chronic kidney disease”. 4th box - It would be good to specify how many patients refused and how many did not return surveys. METHODS It sounds like patients were asked to complete Doctors survey according to the following statement: “Patients were recruited prospectively from clinics and asked to complete a number of questionnaires which included the Diabetes Renal Project (Patient Survey), Diabetes Renal Project (Doctors Survey), the Patient Activation Measure (PAM-13), the Kidney Disease Quality of Life short form (KDQoL TM -36) and the Summary of Diabetes Self-Care Activities (SDSCA) questionnaire (Supplementary Appendices 1, 2, 3, 4 and 5).” RESULTS I am not sure “level 1 PA”, “level 2 PA”, etc. are commonly used expressions to describe patient activation levels, especially when PA has not been defined previously in the manuscript (although PAM - 13 has been). As the authors have provided information on patient activation levels previously in the manuscript (Methods), I think it would be better to simply use level 1, level 2, etc. DISCUSSION I would suggest using “PAM score” [or “patient activation score”] instead of “patient activation level” in the statement: “The mean patient activation level was 57.6 on a theoretical scale of 0–100 ….” Authors' response: We have rephrased the sentence to read, "Although we expected that diabetes and CKD in combination would lead to lower activation compared to either diabetes or CKD alone, our results suggest an improvement in patient activation among patients with diabetes and CKD. This may be attributed to a focus on self-management of diabetes." I would suggest using “higher patient activation” instead of “improvement in patient activation”. The latter sounds like there is a comparison at two timepoints or an intervention involved. “For example, it has been previously reported that younger patients with CKD have poor coping strategies compared to older patients and this may potentially lead to low activation.” My comment on the previous version of the manuscript regarding the above statement refers to the uncertainty in stating that poor coping strategies may “lead to” low activation. As authors have stated, the direction of causality cannot be determined. Thus, an alternative view of poor coping strategies possibly “due to” low activation is also worth a mention in this example.

VERSION 2 – AUTHOR RESPONSE

Reviewer 1

Abstract:

Reviewer's comment

Results - Line 25: Define IQR first before using the acronym

Authors' response

The abbreviation IQR has been spelt out to 'interquartile range'

Methods

Reviewer's comment

Self-Care – Line 24: Good information, but need to include psychometric info.

Authors' response

The SDSCA measures several dimensions of diabetes self-management with adequate internal and test-retest reliability, and evidence of validity and sensitivity to change [32]. An overall Cronbach's α coefficient of 0.63 has been reported [33].

Reviewer's comment

Patient Activation – Line 13: Would like to see psychometric info here, too.

Authors' response

It has similar reliability and validity to the 22-item version across different ages, genders and health condition status (Cronbach's alpha of 0.91 and a Rasch person statistic of 0.81 for the real and 0.85 for the model on which it was based) [3, 40].

Data Analysis

Reviewer's comment Line 30: provide examples of "some variables"

Authors' response

Cases with missing values were not included in the analyses after checking for the amount of missing data which was minimal (less than 1%) for variables such as age, eGFR, SES and duration of diabetes and kidney disease.

Results

Reviewer's comment

Patient Characteristics – Line 45: type out the word three per APA format; adhere to this criterion throughout the paper (numbers < 10 are written)

Authors' response

A total of 3028 patients were screened, 317 studied and of those 305 included in the analyses after the exclusion of nine patients who had their eGFR misclassified (>60ml/min/m2) and three patients who had incomplete PAM data (Fig 1).

Reviewer's comment

p. 69, line 12+: Rewrite the data with consistent use of punctuation; missing datum for level 3.

Authors' response

This has been addressed as per second reviewer's comment to read, "Twenty-two percent self-reported PAM level 1, 23.6% level 2, 36.4% level 3 and 18% level 4 (indicating greatest activation) (Figure 3)."

Discussion:
Reviewer's comment
P. 70, line 45: include what level of PA is: 57.6 to enhance readers' understanding.

Authors' response
The sentence has been rephrased to read, "The mean patient activation score was 57.6 on a theoretical scale of 0–100 and was comparable to the means cited in several studies across other regions and disease condition [15, 42, 49]"

Reviewer: 2

Reviewer's comment
FIGURE 1:
2nd box - "either comorbid diabetes or chronic kidney disease": "Comorbid" in this phrase is confusing. It would read better as "either diabetes or chronic kidney disease".
4th box - It would be good to specify how many patients refused and how many did not return surveys.

Authors' response
The second box has been amended to read, "Patients excluded because they had either diabetes or chronic kidney disease: n=2165".
The fourth box has been amended to read, "Patients who refused to participate: n=41. Patients who did not return surveys: n=505.

Reviewer's comment
METHODS
It sounds like patients were asked to complete Doctors survey according to the following statement: "Patients were recruited prospectively from clinics and asked to complete a number of questionnaires which included the Diabetes Renal Project (Patient Survey), Diabetes Renal Project (Doctors Survey), the Patient Activation Measure (PAM-13), the Kidney Disease Quality of Life short form (KDQoL TM -36) and the Summary of Diabetes Self-Care Activities (SDSCA) questionnaire (Supplementary Appendices 1, 2, 3, 4 and 5)."

Authors' response
The sentence has been rephrased to read, "Patients were recruited prospectively from clinics and the following questionnaires were completed; the Diabetes Renal Project (Patient Survey), Diabetes Renal Project (Doctors Survey), the Patient Activation Measure (PAM-13), the Kidney Disease Quality of Life short form (KDQoL TM -36) and the Summary of Diabetes Self-Care Activities (SDSCA) questionnaire (Supplementary Appendices 1, 2, 3, 4 and 5)."

Reviewer's comment
RESULTS
I am not sure "level 1 PA", "level 2 PA", etc. are commonly used expressions to describe patient activation levels, especially when PA has not been defined previously in the manuscript (although PAM - 13 has been). As the authors have provided information on patient activation levels previously in the manuscript (Methods), I think it would be better to simply use level 1, level 2, etc.

Authors' response
The sentence has been rephrased to read, "Twenty-two percent self-reported PAM level 1, 23.6% level 2, 36.4% level 3 and 18% level 4 (indicating greatest activation) (Figure 3)."

DISCUSSION

Reviewer's comment

I would suggest using "PAM score" [or "patient activation score"] instead of "patient activation level" in the statement: "The mean patient activation level was 57.6 on a theoretical scale of 0–100 …."

Authors' response

The sentence has been rephrased to read, "The mean patient activation score was 57.6 on a theoretical scale of 0–100 and was comparable to the means cited in several studies across other regions and disease conditions [15, 42, 49]"

Reviewers' comment

Authors' response: We have rephrased the sentence to read, "Although we expected that diabetes and CKD in combination would lead to lower activation compared to either diabetes or CKD alone, our results suggest an improvement in patient activation among patients with diabetes and CKD. This may be attributed to a focus on self-management of diabetes."

I would suggest using "higher patient activation" instead of "improvement in patient activation". The latter sounds like there is a comparison at two time points or an intervention involved.

Authors' response

The sentence has been rephrased to read, ""Although we expected that diabetes and CKD in combination would lead to lower activation compared to either diabetes or CKD alone, our results suggest higher patient activation among patients with diabetes and CKD. This may be attributed to a focus on self-management of diabetes."

Reviewer's comment

"For example, it has been previously reported that younger patients with CKD have poor coping strategies compared to older patients and this may potentially lead to low activation."

My comment on the previous version of the manuscript regarding the above statement refers to the uncertainty in stating that poor coping strategies may "lead to" low activation. As authors have stated, the direction of causality cannot be determined. Thus, an alternative view of poor coping strategies possibly "due to" low activation is also worth a mention in this example.

Author's response

The sentence has been rephrased to read, "For example, it has been previously reported that younger patients with CKD have poorer coping strategies than older patients [58], which may lead to low activation or could possibly be due to low activation".