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Title	Registered nurse staffing and the management of patients with Type 2 diabetes within primary care: a cross-sectional linkage study
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Reviewer 1	Dr. Lee Green
Institution	University of Alberta, Family Medicine, Edmonton, Alta.
General comments (author response in bold)	1. The background frames the study question clearly, and establishes the place of this work in the literature. It is not clear what the sentence on wait times (p5 lines 13-15-17) contributes; it is an opinion only and seems off-topic. The references cited (other than #18) are germane and I do not see any important absences. **The authors are in agreement that the statement regarding access to care and wait times does not directly contribute to the study rationale and have deleted it. Reference#18 was removed from the manuscript.** 2. The methods are clear, and described in sufficient detail. The basic design is appropriate for the question asked. It would be stronger if a subset of practices that increased or decreased RN staffing since joining CPCSSN, and demonstrating that outcome measures tracked those changes. However, the cross-sectional-only design is sufficient for the authors' purposes. **No revisions required.** 3. Can anything be said about differences between those FHTs that did and did not choose to participate? Did they differ in any systematic way? **Without any organizational-level data, it is unclear how FHTs that chose to participate or not to participate in the survey differ. A statement addressing this has been made within the "Interpretation – Limitations" section of the manuscript.** 4. Dichotomizing the exposure variable seems wasteful of information, notwithstanding that it has been used in another study. It is not particularly important for this paper to maintain compatibility of measure with the prior work, so it would be preferable to use a continuous measure, particularly as there are only 2 practices without RNs. Using the diabetic patient-to-RN ratio variable as defined, with the addition of a no-RN category, in a logistic model might be preferable. **There are several strategies that can be used to study nurse staffing. Literature that exists within the primary care setting has typically used a dichotomized variable (i.e. presence/absence of nurses). Therefore, we decided to use this approach as an initial step in determining whether nurses influenced diabetes management indicators. To build on existing work conducted in other settings, we conducted another analysis exploring whether diabetic patient-to-nurse ratios (as a measure of the "dose" of nursing) influenced the outcomes explored. Both of these strategies (i.e. presence/absence of nurses, patient-to-nurse ratios) have been previously used in the literature to explore the influence of nurses on patient outcomes.** 5. Stepwise elimination of variables can distort model effect size estimates, but it is justified in testing for and addressing multicollinearity and confounding. It is not clear from the description provided whether the analysis used backwards stepping only diagnostically, while retaining the variables for the final model. **The modeling strategy used was a manual backwards elimination strategy that was built around an epidemiologic paradigm. First, modification was assessed followed by confounding. The most parsimonious model was sought in all cases AFTER ruling out modification and confounding. This is described in the "Statistical analysis" section of the manuscript.** 6. Clinic size (number of physicians/NPs) may affect process of care and intermediate outcomes as well. Was it considered in the modelling? **This is an important consideration. Due to the unit of analysis utilized in the study (n=15 FHT practices), the number of covariates utilized in the modeling process were limited and had to be carefully selected. Within the "Interpretation – Limitations" section of the manuscript, the authors elaborated on this limitation to emphasize its importance.** 7. Are the individual cell comparisons within columns in Table 4 corrected for multiple comparisons? The five ANOVAs of Table 4 do not appear to be, nor are the five logits of Table 3 - though most of the P values in Table 3 are sufficiently small that they would remain significant regardless. (Table 4 appears to reflect five one-way ANOVAs, though the methods simply say the associations were explored using ANOVA, with no specification of model.) **We agree that multiple comparisons is a relevant issue for this paper. We have added to the limitations section noting that there is a risk of an inflated family wise error rate. However, as the overall intent of this analysis was to explore associations between RN staffing and diabetes management indicators, we have not changed the conclusions of the paper. The intent of the study was hypothesis generating and not to test definitive hypotheses. Certainly, this may increase the risk of finding spurious conclusions; however, we feel that the results provide important information about the POTENTIAL contribution of RNs within primary care and are important observations to contribute to this growing body of literature.** 8. The interpretation is generally logical. However, the authors should be careful using the term "outcomes". They have not demonstrated an association of RNs with actual patient-oriented

	outcomes, but rather with intermediates - clinical or laboratory values that are (in the case of BP, for example) or are not very much (e.g., A1c) associated with actual patient outcomes. **To address this important feedback, we have removed the term 'patient outcome' from the manuscript entirely and replaced it with 'diabetes management indicators' or 'clinical outcomes of patients who have Type 2 diabetes' to add clarity. We also modified the title accordingly.** 9. The tables are clear, and not redundant with the text. **No revisions required.**
Reviewer 2	Prof. Rory A. Tekanoff
Institution	Urban Care Health Group, Community Medical Programs, London, Ont.
General comments (author response in bold)	1. There is no distinction between patients with type 1 diabetes and type 2, both of which require similar if not more extensive care (type 1) yet the reader is left to decide on the merit of the paper based on these kind of statements. (page 6 lines 33-37) This should not be left to reader interpretation at all since the study is based on exercising proper care and moving patients to a variety of targets including A1C. This is of great interest to readers. There is significant level of rigor in moving patients to proper targets in the type 1 class, if not separate techniques in doing so. **Within the CPCSSN database, no distinction is made between patients with Type 1 diabetes and Type 2 diabetes. The rationale for focusing on Type 2 diabetes is provided in the Introduction section of the manuscript, following the purpose statement (e.g. > 90% of patients with diabetes have Type 2 diabetes). Also, we added to this statement to emphasize the important role that nurses have in reducing complications related to Type 2 diabetes.** 2. Were nurses involved here or more traditionally, physicians who were educated in the latest techniques and medications for type 1 control. I cannot leave readers to interpret this on their own. **The specific roles/processes of nurses and/or physicians were not examined in this study. This is an important area that is proposed for future inquiry though within the Interpretation section of the manuscript. The overall aim of this study was to explore associations between models of care that incorporate RNs and indicators of effective Type 2 diabetes management that align with the Canadian Diabetes Association (2013) Clinical Practice Guidelines. Medications and prescribing patterns were not examined.** 3. Additionally, the study DOES not separate the roles of the nurses within the diabetic health teams. This is a huge gap not addressed by the authors, which their databases do not supply. Did nurses do questionnaires, did they do follow up with patients, did they administer drugs, did they do refill reminders? We have no idea as readers the exact role of the nurses. This would help to substantiate an increase in reaching targets as well as overall patient care. This would have required a simple survey to distinctly define roles within the FHTs, so as to disassociate any cross over care that might have been undertaken with physicians. This leave the reader to ponder what role a conscientious physician may have had in the diabetic patient's care. Page 13 line 13-15. **The authors agree that it is important to explore nursing roles in the management of patients with Type 2 diabetes. Previous literature describing nursing roles within primary care has demonstrated that nurses undertake many of these important activities that contribute to chronic disease management (e.g. follow-up with patients). However, there is a gap in the literature with respect to understanding how nursing resources or contributions affect overall patient care. This study is an important step towards addressing this gap in the literature and sets the groundwork for further exploration of RN contributions in the primary care setting. We added to the Conclusion and Implications for Future Research section of the manuscript noting this important gap in the literature.** 4. Table 2 could be improved to include a column indicating RN staffing, for the clarity of the reader. **Table 2 displays patient-level data specifically related to diabetes management. Therefore, the authors did not feel it was appropriate to make any changes to the organization of data within the tables and left RN staffing data within Table 1.**