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Title	Individual and area level socioeconomic inequalities in diabetes in Saskatchewan between 2007 and 2013: a cross-sectional analysis
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Reviewer 1	Laura Rosella
Institution	University of Toronto, Dalla Lana School of Public Health, Toronto, Ont.
General comments (author response in bold)	Further detail is required in the description of the analytic cohort. In detail, please include the numbers available in the Saskatchewan sub-sample of the sample for linkage and then the number (and the survey linkage rate) for those that were actually linked. **We have included this detail in the paper and moved the reporting to the results section (Page 6 Line 3-10 and Figure 1).**
	It may not be clear to the reader that these are repeated cross sectional surveys, all with differ follow-up time or look-back time from the administrative data. Furthermore, provide the years, versus cycle numbers, of CCHS, and the years of follow-up so the reader may be able to understand the length of the follow-up for each of the surveys as it varies (i.e. 2005 to XXX, 2007/8 to XXX). **We have changed this to indicate the year associated with each cycle.**
	The main concern with sample used for analysis is that it is not clear if these are incident cases included, what the study design is, or how prevalent cases were treated. For example, one could imagine a study design where SES measures were taken at baseline and those with prevalent diabetes are excluded from the analytic sample. Going forward the incident cases are captured and used for the modelling, but would require a different approach and lead to different interpretations. An alternative would be to include prevalent cases, which makes this a cross sectional study. If both incident and prevalent cases were included, this may obscure the associations and would need justification. The flow chart provided does not allow the reader to be clear on when the diabetes cases were identified relative to their survey date. If it is prevalent as of survey date a look-back period must be provided. An explicit statement on what the study design is should be included. **This study includes only prevalent cases of diabetes for each year. In each study year, we include all prevalent cases of diabetes who have provided permission to link their CCHS data. We have clarified this in the flow chart and in the paper (Page 6 Lines 3-10 and Figure 1).**
	Can the authors provide justification why income adequacy (relative ranks, such as quintiles) was not used at the individual level, even as a supplementary analysis. The reason why it would be important is because the quintile-approach is used at the area-level and given an individual and area-level comparison is being made then it would follow that the quintile-based SES measure is also used. Using the different operationalization of the SES concept makes any type of comparison between individual and area-based measures difficult. **We used different operationalisations of SES based on our previous work with both Income and the deprivation index in Saskatchewan. Area based income and the area level deprivation index are highly correlated measures. Our previous work indicates that for Saskatchewan as a whole and for urban Saskatchewan the deprivation index better represents the concept of SES. However, at the individual level, particularly in rural areas, an individual level deprivation index does not capture the concept of SES as well as income. From a statistical perspective it is true that comparisons between different measures is challenging. From conceptual perspective we are using measures that are appropriate given the SES Saskatchewan, both between area and individual levels, and urban and rural. We have included brief detail about this in our introduction.**
	Multilevel logistic regression as an analytic approach is reasonable if this is a cross-sectional analysis. The authors are to be commended for properly incorporating the complex survey weights. The challenge is if indeed incident cases are captured, an event-based approach that would account for follow-up time would be more appropriate. Again it's not clear how prevalent versus incident cases are captured in the follow-up and once this is clarified this may address this point **As described above, we include prevalent cases. As the reviewer has mentioned we feel our analytic approach is appropriate.**
	I would suggest figure 2 to be revised to remove lines between the dots (there is no connection between these points as they are separate groups) and perhaps re-do as a histogram, which would be much clearer. **Based on this feedback and feedback from the editors we have removed this figure.**
	In the results (page 9, lines 30 to 37), the authors make mention of mediation. This is an interesting idea however the subsequent analysis that following (a stratification by urban/rural) does not address or assess mediation. Instead a stratified analysis would provide an idea of effect modification i.e. that the defect differs by urban/rural status. I would suggest removing the reference to mediation and instead describing this analysis as a way to assess if the effect differed by urban/rural status. **We have removed reference to mediation.**
	There are some important diabetes-SES papers that appear missing – including a SR/meta-analysis and another Canadian study: • Ahardh et al. International Journal of Epidemiology. 2011 40:804-18 • Rivera et al. International Journal for Equity in Health. 2015 14:101 **We have included these papers (Page 1 Line 5 and Page 8 Line 20-23).**
	Consider removing unweighted percent from Table 1. Unweighted N is critical but the unweighted percent is not particularly useful. **We have removed unweighted percent and weighted N from the table.**
	Footnotes are missing from Table 2 and 3 describing the models. The assumption is that all other variables listed are controlled for but this should be explicit. **We have included footnotes.**
Reviewer 2	Kristin Clemens
Institution	Western University, School of Medicine & Dentistry, London, Ont.
General comments	In their article "Individual and area level socioeconomic inequalitites in diabetes in Saskatchewan between 2007 and 2013: a multilevel analysis", Fuller et al aim to examine the association between individual and area level socioeconomic measures and

(author response in bold)	physician diagnosed diabetes in Saskatchewan over time. Major comments: I might encourage the authors to expand upon what their study adds to the literature. They do note in their discussion that multiple other articles have examined this association. **We have simplified and expanded the discussion.** In the discussion, I might be clearer about how the results of this study might be specifically used. What could the results mean for researchers and policy? This might help readers to better interpret/apply the study results. Minor comments: Were you interested in the association between incident diabetes or prevalent diabetes? This was a bit unclear to me. **Based on this comment and comments form other reviewers we have clarified this throughout the paper.** The article is generally well written. I might encourage a re-review however, for typos (eg. "CI" on page 4, first paragraph), and for grammer (eg. Page 8 "the youngest groups were least likely to suffer incidence..") **We have corrected these errors.**
Reviewer 3	Tamara Spaic
Institution	Division of Endocrinology and Metabolism, Western University, School of Medicine & Dentistry, London, Ont.
General comments (author response in bold)	Consider limiting the study to adult population only (it is unclear from your paper whether age <35 included pediatric population) and address the limitation of administrative data base with respect to diabetes diagnosis. The authors conclusion refer to T2D diabetes population only (line 23) which the study methodology does not support or at least is not supported by the results presented in the manuscript. **We have stated that this includes all persons age >1. To the second point, this was an error on our part. There is no differentiation of T2DM in this study.**