Reviewer's report

Title: Intra-cluster correlation coefficients in adults with diabetes in primary care practices: The Vermont Diabetes Information System Field Survey

Version: 1 Date: 6 January 2006

Reviewer: Patty Chondros

Reviewer's report:

General

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Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

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Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

Abstract: Background

1) Pg 2: The term “clustered studies” in the first line of the abstract may also imply that multiple studies are clustered rather than its intended meaning where the study design involves recruiting individuals from within clusters. Need to modify wording to eliminate any ambiguity eg cluster-based studies or cluster sample study designs

Background

2) “To the extent that patient characteristics are independent of cluster, the effective sample size will be close to the number of subjects”.
- Need further clarification on the number of subjects, do you mean the number of subjects required for a cluster-based study?

3) “The inflationary factor, sometimes called the design effect, is a function of how much correlation there is within each cluster. This clustering can also be quantified by the intra-class correlation (or intra-cluster correlation) correlation coefficient”
Suggest changing the wording “This clustering can also be quantified” to “This correlation is known as the intra-class correlation (or intra-cluster correlation) correlation coefficient”

Methods

4) Pg 5 Functional status and Depression, first line
Add “Health Survey” to the description of the SF-12 ie “Medical Outcomes Trust SF-12 Health Survey”.

Pg 6 Statistical analysis
5) Describe in more detail which methods/formulas were used to calculate the ICC and standard
error of the ICC for the continuous and binary variables.

Results

6) Generally avoid using the word “clustering” to describe the degree of the correlation within clusters. All participants are clustered within a practice, however the degree to which their characteristics are similar or dissimilar within the clusters is measured with the ICC.

Pg 6, first paragraph.
- Change the wording of “within practice clustering” to “within practice correlation”.
- Wording “also among the most clustered” is incorrect. Suggestion “also had high ICCs ranging between X and Y compared to the other variables”.
- Last line “...appears to vary importantly across practices” – How do they vary importantly across the practices? What is the range of ICC?

- Pg 6, 2nd paragraph: Revise wording for “were clustered within practice” . Suggestion “had relatively higher ICCs”
- Pg 7, 1st paragraph: “Health literacy is a substantial ... with little clustering within practices” - Not sure what this statement means? Please clarify or revise the sentence?

7) Pg 7, Last paragraph: Need to revise sentence “the impact of clustering on sample size appears to be a relatively small effect”. The impact on the sample size can have a great effect even with a relatively small ICC. Even with an average cluster size of 14.5, the design effect (deff) is 1.68 for an ICC of 0.05 and the deff=1.14 for an ICC of 0.01.

Discussion

8) Pg 7, paragraph 2: “clustered studies” See comment 1
9) Pg 7, paragraph 2: “If the average cluster contains m subjects” Need to revise the wording. Suggestions: “If the average cluster size is m” or “the cluster contains on average m subjects”

10) Pg 7, paragraph 3: Suggest changing sentence “unless they happen to have the same cluster sample size (which is extremely unlikely)” to “unless they have the same mean cluster size as this study”.

11) Pg 7, paragraph 4, beginning of first sentence: Suggest including ICC at the beginning of the paragraph ie “These ICC estimates...”

12) Pg 7, paragraph 4. Provide a brief description of the clusters ie GP practices in the results section (eg median and range of the number providers per practice, sex, age of providers etc). If published elsewhere, then reference the information regarding median number of providers per practice in the discussion.

Table 1

13) Complications of diabetes: Are estimates given in the table for complications of diabetes the mean number of complications or the percentage of participants with the complication? If percentages are given, need to add (%) to each complication for clarity.

14) Also, add footnote to table 1 describing that unless otherwise indicated the mean is presented for the variables.
15) What is the range of values applicable for each of the “Audit of diabetes – dependant Quality of Life” variables?

16) Pg 8, References: Need to correct the initials of first author for the first two references from DM to SM.

Discretionary Revisions (which the author can choose to ignore)

Methods
1) Pg 3 Demographics and social and economic characteristics:
Include the $US to the $ to the income groupings

2) Table 1: Health insurance: Are the 4 types of health insurance mutually exclusive or can individuals have more than one insurance type? Add a brief explanation either in footnote of table or in methods section describing the health insurance types to clarify the different insurance types for readers not familiar with the US health system.

3) Also consider including the precision of the estimates (eg 95% Confidence interval for population ICC: ICC +/- 2xSE) when interpreting the estimated ICCs.

4) For comparative purposes in Table 2, the authors may also be interested in a paper recently published with estimates of ICC for middle aged and older adults in primary care in Australia and New Zealand.

What next?: Accept after minor essential revisions

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

Statistical review: No

Declaration of competing interests:
'I declare that I have no competing interests'