Reviewer's report

Title: Demographic determinants of gastrointestinal illness in Canada: a population study

Version: 1 Date: 8 March 2007

Reviewer: Gillian g Hall

Reviewer's report:

General
Revisions are labeled as requested as Discretionary revisions, Minor essential or Major compulsory

1. Is the question posed by the authors new and well defined?

The question is clear and has not previously been published; ie to determine the demographic determinants of increased risk of GI in Canada.

Minor essential revision
The claim that studies of determinants of health ‘is essential to determine direct and indirect causal pathways “ is true but is claiming too much in the context of this study. The objective was simple- to identify demographic determinants which may help identify vulnerable groups, but not causal pathways. This paragraph should be rephrased to reflect this.

The final paragraph in the Background would be better placed in the later sections for Results and Conclusion.

2. Are the methods appropriate and well described and are sufficient details provided to replicate the work?

Minor essential revision
The methods are not given in detail and the statement that ‘they have been described in detail elsewhere’ is not supported by a clear reference (are the references those given in the preceding sentence? The reference needs to be next to the statement.

Minor essential revision
The cases are referred to as ‘GI’. However, ‘Gastrointestinal Illness’ is a very broad term and the study actually focused on infectious gastroenteritis. The term “GI” should be modified to reflect this.

The case definition could be more clearly worded. Presumably respondents are defined as a case if they reported diarrhea and/or vomiting in the previous 4 weeks. The list of exclusions includes those with ‘other causes’- presumably this refers to ‘other chronic conditions’.

Education is defined as the highest achieved by the respondent or by their proxy if used. What about children 12-18 years of age? Some may be associated with a proxy’s education (most likely parent) and some with their own (which may be limited simply by their age). Some explanation is required on what might be the effect of this differential in classification of the exposure variable?

Minor discretionary revision
The details about logistic regression are not needed. As this is a standard procedure the paragraph explaining the equation of a general logistic regression model can be omitted
“ Respondents were classified…. represent adjusted odds ratios.”

The inclusion of the study area in the initial models (later referred to as ‘univariate models’) warrants explanation - it is appropriate to include but the rationale is not given.

Minor essential revision
The explanation of how the multivariate models were constructed does not state whether inclusion in a model was based on statistical significance and the level of significance that was used. Presumably this was a criterion for inclusion in the final model and needs to be explained.
3. Are the data sound and well controlled?

Minor essential revision
The response rates are at the lower acceptable end. Some discussion of possible bias due to this would be beneficial.

Some information about missing values is needed—was this an issue in the multivariate models?

4. Does the manuscript adhere to the relevant standards for reporting and data deposition?

Minor essential revision
The results would be best presented as odds ratios with 95% confidence intervals. Coefficients are more difficult for the reader to interpret and are generally not needed as well as odds ratios.

Minor discretionary revision
Table 3 about the interaction between sex and income is not entirely clear—was the data stratified by income then male vs female odds generated? This does not take account of the effect of the other variables in the multivariate model in table 2 but can still be an accessible way of presenting results. A more accessible but similar idea might be to present a figure for males and females showing how odds of illness change with income for each sex separately. This could be calculated from table 2.

5. Are the discussion and conclusions well balanced and adequately supported by the data?

Minor essential revision
The statement that the Welsh study by Evans et al is consistent with the results about age does not appear to be correct as different age groups were identified as ‘at risk’. The age group 18-24 was not found to be at risk in the current study and the subsequent argument about ‘second weaning’ does not appear to be supported by the results. This needs clarifying.

6. Do the title and abstract accurately convey what has been found?

Yes except for the concern about the use of the term ‘gastrointestinal illness’ described above.

7. Is the writing acceptable?

The writing is clear.

Summary
This paper is of general interest and should be published with minor revisions

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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)

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Discretionary Revisions (which the author can choose to ignore)