Author's response to reviews

Title: Determining the Association of Medical Co-morbidity with Subjective and Objective Cognitive Performance in an Inner City Memory Disorders Clinic: A Retrospective Chart Review

Authors:

Corinne E Fischer (FISCHERC@smh.ca)
Depeng Jiang (jiang@cc.umnitoba.ca)
Tom A Schweizer (SchweizerT@smh.ca)

Version: 3 Date: 29 November 2010

Author's response to reviews: see over
November 26 2010
BMC Geriatrics
Dear Editor-in-Chief:
Re: Manuscript 9213588704094178
Determining the impact of medical co-morbidity on subjective and objective cognitive performance in an inner city memory disorders clinic: a retrospective review
Thanks very much to both you and the reviewers for the excellent feedback on the article. I will attempt to address each reviewer’s concerns in turn:

With respect to the comments from the editor in chief:
(1) As requested previously, please include context information within the background section of your abstract in addition to the aims of your study.
I have included additional background information regarding the location of the clinic and the nature of patients referred in the background section, abstract, background, page 2. This has been highlighted using track changes.
(2) Please also highlight (with 'tracked changes'/coloured/underlines/highlighted text) all changes made when revising the manuscript to make it easier for the Editors to give you a prompt decision on your manuscript.
All changes to the manuscript have now been highlighted using track changes.
(3) Ensure that your revised manuscript conforms to the journal style (http://www.biomedcentral.com/info/ifora/medicine_journals). It is important that your files are correctly formatted.
The manuscript adheres to the formatting guidelines as set out in the journal’s website.

With respect to comments from reviewer number one:
Thanks for the excellent feedback. I will attempt to respond to each point in turn.

Reviewer: Klaus P. Ebmeier
Reviewer's report:
1. Is the question posed by the authors well defined?
The authors hypothesize "based on the literature that low SES, increased medical co-morbidity, low education, and the presence of depression would be associated with objective cognitive impairment but not necessarily with subjective memory loss."
This hypothesis is fine as far as it goes, but to what extend do the results of this study illuminate the nature of cognitive impairment found in a memory clinic?
The reviewer raises an excellent point that given the setting of the study the hypothesis must be limited to a memory clinic setting and any conclusions derived from the study are relevant only to such a setting. I have highlighted this in the background, first paragraph, page 5.
2. Are the methods appropriate and well described?
"It should be noted that to adjust for the confounding effects of age we reran the spearman rank correlations analyses with age as a co-variate and the results were similar except for a small change in the magnitude of the observed associations. In addition, we conducted multivariable linear regression to examine whether depression or subjective memory complaints were associated
with objective memory loss when the effects of medical comorbidity were removed. We found no significant associations." The rationale and the details of this analysis are not clear.

The reviewer raises an excellent point. These adjustments in the statistical approach were made in response to comments from another reviewer. Their rationale and the actual analyses are included below. We have provided some explanation of the rationale in the manuscript (results section, first paragraph, page 9) but elected not to include the actual analyses in the manuscript given that the additional analyses did not yield any significant changes.

We agree with reviewer that age may be a covariate or suppressor variable in the correlation analysis. To examine whether it makes a difference if we adjusted for effect of age, Spearman rank correlation analyses were conducted to partial out the effect of age. The result was reported in Table 2_A for the reviewer’s interest. From Table 2_A, we found that almost all of the conclusions were the same except for a slight change in the magnitude of correlations.

We conducted multivariable linear regression analysis to examine whether depression or subjective memory complaints may be associated with objective memory/cognitive performance after the effects of medical comorbidity were removed. The results are reported in Table 3. From Table 3, we found that the correlation between depression (or subjective general complaints) and the BNA total score was not statistically significant after adjusting for the effects of age and medical comorbidity. We are not sure whether this is a power issue (small sample size). That is why we just conducted bivariate correlation analysis in this paper.

Table 2_A presents the Spearman correlations between the independent variables (e.g., level of residential area SES) and outcome variables (e.g., subjective complains and objective measures of cognitive abilities) adjusted for age.

<table>
<thead>
<tr>
<th>Subjective general complaints</th>
<th>Education years</th>
<th>Residential area SES</th>
<th>Cumulative illness rating</th>
<th>Depression</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subjective general complaints</td>
<td>0.02</td>
<td>-0.34(**)</td>
<td>0.18</td>
<td>0.46(***</td>
</tr>
<tr>
<td>Memory complaints</td>
<td>0.03</td>
<td>-0.38(***</td>
<td>0.15</td>
<td>0.44(***</td>
</tr>
<tr>
<td>Language/communication problem</td>
<td>-0.02</td>
<td>-0.30(***</td>
<td>0.14</td>
<td>0.24(*)</td>
</tr>
<tr>
<td>Complaints of motor difficulties</td>
<td>-0.03</td>
<td>-0.07</td>
<td>0.07</td>
<td>0.11</td>
</tr>
<tr>
<td>Complaints of thinking</td>
<td>0.13</td>
<td>-0.16</td>
<td>0.20</td>
<td>0.44(***</td>
</tr>
</tbody>
</table>
Table 3. Multivariate linear regression analysis on objective memory/cognitive performance (BNA total score).

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Estimate (SE)</th>
<th>( R^2 )</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cumulative illness rating</td>
<td>-1.27(0.54)</td>
<td>0.02</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-0.26(0.16)</td>
<td>0.10</td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td>1.66(3.08)</td>
<td>0.59</td>
<td>0.126</td>
</tr>
<tr>
<td>Cumulative illness rating</td>
<td>-1.08(0.53)</td>
<td>0.04</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-0.34(0.16)</td>
<td>0.05</td>
<td></td>
</tr>
<tr>
<td>Subjective general complaints</td>
<td>-0.06(0.07)</td>
<td>0.17</td>
<td>0.136</td>
</tr>
</tbody>
</table>
8. Do the title and abstract accurately convey what has been found?
"Impact of Medical Co-morbidity on Subjective and Objective Cognitive Performance" implies a causal connection which cannot be proven with cross-sectional data. "Association" would be more appropriate.
We agree with the reviewer’s comment and have modified the abstract (page 2) and title (page 1) accordingly.

With respect to comments from reviewer number two:

**Reviewer:** John G Keilp
**Reviewer's report:**
The authors have addressed major critiques adequately, to the extent that their data allow. There are interesting questions regarding the interaction of mood state, medical comorbidity, and cognition, but the data here are limited to address them in a very sophisticated way. The authors justifiably keep their analyses simple, and should simply acknowledge that there is more that can be done to disentangle these clinical relationships.

We thank the reviewer very much for his helpful comments. We have added a comment to reflect the reviewer’s suggestion in the discussion, first paragraph, page 13.

With respect to comments from reviewer number three:

**Reviewer:** Judith A Saxton
**Reviewer's report:**
The authors have addressed all of my concerns. I have only one additional suggestion. In the Results section the authors report that 39% of the sample were “demented” and “9% had dementia secondary to some other cause”. Do they mean that 39% had Alzheimer’s dementia? They should clarify this.
The reviewer raises an excellent point. I have included more information in the results section, first paragraph, page 8. The 39% refers to dementia of multiple causes including Alzheimer’s disease, mixed dementia, frontal-temporal dementia and dementia with lewy bodies. The 9% includes atypical causes such as traumatic brain injury, lyme disease, cancer, etc.

**Level of Interest:**
Accept after minor essential revisions

Thanks very much to the editor in chief and reviewers for your helpful comments. Please let us know if anything requires further clarification. I have saved the manuscript changes using track changes so they should be easy to identify.

Sincerely,

Corinne Fischer MD FRCPC
Director of the St. Michael’s Hospital Memory Clinic