Author's response to reviews

Title: Very low neighbourhood income limits participation post stroke: Preliminary evidence from a cohort study

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Version: 4
Date: 14 April 2015

Author's response to reviews: see over
Dear Mr Silvestre,

Thank you for sending us this second round of reviews. We have considered this feedback carefully and made a number of changes that we believe strengthen this manuscript. Please find details regarding these changes below.

**Reviewer 1:**

**Major Revisions:**
The main problem with this manuscript is the very small sample size of the low-income neighborhood group at 6 participants. *Agreed - noted in the discussion.*

**Abstract - Methods:** A sentence describing the FIM should be added. The reader is unaware of what it measures.
*Added* - On this functional independence measure, these scores indicate that assistance is needed with related tasks up to 50% of the time.

**Methods - Paragraph 1:** I would include a little more detail on the prospective cohort. (i.e. how were the participants contacted?, did you work with a local hospital?, etc.)
*Added* - Recruitment took place between March 2008 and February 2010 from one acute care stroke unit and two stroke rehabilitation units.

**Methods - Paragraph 1:** Information on the FIM index should be included. (What is it? Score range? Reasoning behind using a score of 3 as a cutoff point?) Also, did your team construct the items used?
*Added* - FIM™ cut-off scores on this popular standardized tool correspond with needing help not more than 50% of the time to carry out activities requiring comprehension, memory and problem-solving. This cut-off score was selected to help ensure participants could respond to assessment tools.

**Methods - Paragraph 3:** Where does the RNLI come from? Please add a reference.
*Reference 29 is the general reference for the RNLI. We have also included a reference regarding visual analog scales post stroke.*

**Methods - Paragraph 5 - Sentence 2:** You should explain the reasoning of your choice for cut-point. You might move your explanation from the results section to here.
*Sentence rewritten: First, for each time period, RNLI scores were plotted against neighbourhood income to determine if there was an evident low-income cut-point. As examining the data for an evident cut point was part of our analysis, we would prefer to keep the description of the cut point we determined in the results section.*

**Methods - Paragraph 6:** Please explain/justify your choice of using the GEE model. GEE models are usually used for binary variables, why did you not use a mixed model?
GEE analysis was selected on the basis of the recommendation of another reviewer. While in practice it is more common to use mixed models for non-categorical dependent variables and GEEs for categorical dependent variables, GEEs are flexible and can be used with any type of DV, including (quasi-)continuous, binary, ordinal, or count variables.

Results - Paragraph 1 - Sentence 3: You should add some relevant participant descriptive characteristics into the text.
Added - Characteristics of the participants are provided in Table 1. There were no statistically significant differences between the very low income and other income participants in terms of gender, age, living arrangements, or occupational status.

Results - Paragraph 3 - Sentence 3: This result for the low-income neighborhood participants is not necessarily due to the stroke. Perhaps they always had the same lower RNLI scores and they just stayed the same. This possibility should be included in your discussion as a limitation to the research since there are no baseline scores.
Good point!
Added - Finally, we did not inquire about participation in personally valued activities prior to the stroke. We do know how much of the difference in participation between the two groups predated the stroke.

Results – Paragraph 5 - Sentence 2: As you included P-values for all the other Table 8 results in the text, you may want to include the P-value for very low income (...RNLI scores approximately 13 points lower and this was statistically significant (P = 0.003).
Added

Results - Paragraph 6: The income by time interaction is a secondary hypothesis that you should introduce in the methodology.
We have included in the last line of the results that this was a post hoc analysis.

Discussion - Paragraph 1 - Sentence 1: I would move this sentence to another place and remove the word “good”. The sentence is made up of only references. The discussion section should begin with your study outcomes.
We would like to leave it in, as it frames the contribution of this study.

Discussion - Paragraph 1 - Sentence 2: You shouldn’t say, “reengaging in personally valued activities” because the RNLI only reflects the participants’ present situation. It does not ask their engagement now in relation to before their stroke.
We have changed reengaging to participating.

Discussion - Paragraph 1 - Sentence 4: You might want to change “impairment and disability” to “moderate impairment and severe disability” to accentuate the difference between the two. As is “impairment and disability” sounds very similar to the reader.
We have rewritten it “the relationship between impairment and participation”

Discussion - Paragraph 3 - Sentence 1: You should remove the word “relatively” to be “…and a small number of participants from low…”

Done

Discussion - Paragraph 3 - Sentence 5: It is not clear why the reference [27] is at the end of the sentence, can you please explain?
Details of the recruitment rate are provided in this earlier paper.

Discussion - Paragraph 3 - Sentence 6: You can discuss here the socio-economic differences that were observed between the low and other income participants.
We have considered this and chosen not to comment on this because it may detract from the key message regarding the potentially unstable estimates.

Discussion - Paragraph 3: It should also be discussed that neighborhood income level might not necessarily be representative of the participants’ actual individual income, especially with only 6 people in the low-income group.
Appreciating this important point, were careful to only refer to this group as people who lived in low-income neighbourhoods and any findings as potential effects of living in low-income neighbourhoods.

Table 1 – Number of men row: It should be noted that the very low income group is predominantly male (5 out of 6 participants). I would suggest to mention this in the conclusion and a reference to sex differences in post-stroke recovery should be included.
We considered this, but as we did control for gender in the multivariate analyses, we decided not include this in the discussion.

Table 1 – Number of men row: Percent of the sample that are men is indicated to be in parentheses, however, for each sample group the percentages are not correct. All: 32 out of 67 is not 57.1%; Low income: 5 out of 6 is not 8.3%; and Other Income: 34 out of 61 is not 21.7%. In addition, the numbers do not add up. If there are 5 men in the low income group and 34 in the other income group, how are there only 32 men in the whole sample group?
Thank you very much for pointing out these errors. They have been corrected.

Minor Revisions:
Abstract - Conclusions - Sentence 2: The phrase “very low neighborhood income and participation” has already been used multiple times and sounds repetitive.
Corrected – changed to “this relationship”.

Background – Paragraph 8: P_0.0001, is that the exact P-values that were recorded? Or was it P<0.0001?
Corrected
Background – Paragraph 9: “We found no studies” sounds negative for the researchers. You might want to reformulate it. (i.e. No studies could be found comparing functional recovery and neighborhood income.)
Corrected.

Reviewer 2
One minor thing: Please indicate the statistics on Table 2, like mean (SD).
Thank you. This has been corrected.
Background – Paragraph 10 - Sentence 2: The narrative about the research assistant and the hypothesis is unnecessary to include in a scientific article. We would like to retain this as it describes why the hypothesis was formulated.

Results - Paragraph 5 - Sentence 2: I suggest you remove the word “both”. Very low income is both substantively strong and what?
This has been rewritten: The effect of very low income is both substantively strong and statistically significant – those in very low income neighbourhoods had average RNLI scores approximately 13 points lower (p = .003).

Discussion - Paragraph 4 - Sentence 1: You might want to reformulate the sentence or remove it altogether; it sounds a bit repetitive and “relatively” should be removed.
We have retained this sentence (with “relatively” removed) given the added last sentence in the previous paragraph.

Reviewer 2
The authors have responded the reviewers’ comments well.
One minor thing: Please indicate the statistics on Table 2, like mean (SD).
Corrected.