Reviewer's report

Title: Survivors living at home, two years post-stroke: the effects of language function, dissatisfactions with services and information on their quality of life

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Reviewer: REG MORRIS

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Review of:
“Survivors living at home, two years post-stroke: the effects of language function, dissatisfactions with services and information on their quality of life.”
Michèle Baumann, Sophie Couffignal, Senad Karavdic, Etienne Le Bihan, Nearkasen Chau.

This paper describes a survey based on a stroke register in Luxembourg with the aim of examining the impact of dissatisfaction with quality of service, functional impairments and information provision upon stroke survivors’ quality of life at two years after stroke. This is a worthy aim, but I have serious concerns about the paper in its present form. These concerns fall into three principal domains: the logic of the design, the statistical analyses and the language.

The Logic of the Design
This is a cross sectional survey at two years after stroke carried out by interview and questionnaire and using regression to analyse the data. The stated aim (Abstract and end of Introduction) is to demonstrate the impact/effects of functional impairments, demographic factors, dissatisfaction with service provision and information provision (independent variables—putative causes) on quality of life (dependent variables—outcomes) after controlling for functional impairment. The Introduction and the Discussion and Conclusions are replete with references to the impact of the independent variables on outcomes. However, the design is not capable of sustaining such conclusions. The variables were all measured at the same time, and in most cases (excepting fixed or historic demographic variables such as age, gender and education) it is quite possible that the influence was from quality of life towards satisfaction with services. It seems intuitively quite plausible that lower quality of life after two years leads to reduced satisfaction with services and greater psychological morbidity: numerous studies have demonstrated such associations. The fact that regression was used as the method of analysis does not obviate this flaw; the Y (outcome variables, QoL scales) could equally have been designated as X variables (independent variables). In short a more sophisticated design is necessary to achieve the stated aims and to sustain the stated conclusion; ideally with prospective measurement of putative causal variables such as satisfaction, functional impairment and information. Without such a design the authors should temper their statements about the aims of the study and also their
conclusions to indicate that what has been demonstrated is an association between variables, and not the impact of one set of variables upon another. A related point is that the references to “changes in variables resulting from stroke”, “altered variables”, etc. is potentially misleading. This is presumably based on the Newsquol items that refer to issues arising “because of stroke”. But these items do not actually refer to “change”, and the study, as a cross sectional survey at one time point, does not assess change.

The authors use the concept of ‘satisfaction’ in different and potentially confusing ways; for example to refer to satisfaction with services (paragraph 3 of the Introduction) and ‘life satisfaction’ (paragraph 5 of Introduction). They should clarify how these concepts are related. Also a fuller discussion of satisfaction would be helpful; satisfaction with services is a very complex and multi-facetted outcome variable. Some brief discussion of this and its implications for the research would be appropriate.

In summary, paragraphs 3 to 5 of the Introduction need to be revised to clarify the aims of the project, the key concepts and the relationship between them.

Statistics

The section of statistical analyses in the Method section is not clearly written and does not provide the necessary information about procedures. For example, what analysis package was used? Did the regression methods take account of the different types of variables (see below)? The method used in phase 2 for “adjusting” (controlling) for variables retained in phase 1 needs to be explained. The grouping of satisfaction variables into categories (batches) does not make intuitive sense; for example, the accuracy of information item 5 would seem to belong with the other information items 6 & 7.

Multiple regression is an appropriate means of analysis for these data, but many of the variables used here were ordinal or categorical variables for which special logistic regression is required. There is no mention of using different regression methods. If (as seems likely) all the variables were entered into a standard regression analysis that assumes interval level measurement, then the results will not be dependable. In addition, no power analysis is provided. There are various metrics for power; a common one is 50 participants plus 10 additional participants per variable in the X variable list. This means that several of the analyses are seriously underpowered and the absence of significance for some variables is not surprising.

It would aid comparison between variable if standardised beta weights were cited instead of (or as well as) raw regression coefficients.

The authors should present a table of inter-correlations between variables since the outcomes of regression depend on the relative influence of all variables in the set, and this does not always reflect the strength of associations between of pairs of variables.

If I have understood the analyses correctly, then the study employed separate regressions for each of the Newsquol dimensions. This gives 88 separate regression analyses in total allowing for the use of batches in phase 2. Across
these 88 regressions there were 28 variables in total giving a huge number of individual 'tests' of significance on variables. And yet all comparisons were made at alpha set at 0.05. Consequently many of the positive results will be spurious Type 1 errors. It is not normal practice to adjust the alpha level in exploratory analyses such as these using Bonferroni or similar. But this number of analyses is exceptional, and the authors should either restrict the number of variables in the analyses or use a summary statistic as the outcome (Y) variable, such as the total on the Newsquol, to limit the number of analyses.

Language

I sympathises with the authors in writing a scientific article in a language of which they are not native speakers. It is important that the language of such articles is clear and unambiguous and enables readers to understand the aims, methods and conclusions. The standard of English in the majority of this article unfortunately does not meet these criteria. There are too many instances to cite them all; there are many grammatical and idiomatic errors (including one in the title) and a significant number of passages are not clear. For example the penultimate paragraph of the Introduction and second paragraph of the Discussion. The general tenor of what the authors intend to say is often evident after some interpretation, but scientific writing should be unambiguous and not require such interpretation (which may of course not be what the authors intended). The only section of the paper that is up to standard is the Conclusions section which is written in impeccable English. The authors should take steps to ensure that the remainder of the article is drafted to this standard.

Minor Comments

1) The number of grammatical and idiomatic errors is too great to list. The article should be revised with attention to the English.

2) The reference list includes different styles; in some cases the part number is cited, in other instance it is not.

3) Minor punctuation error in reference 22.

4) The reference cited in Appendix 1 at the top is not the correct one.

5) Appendix 2: why is total loss of language classified as 'motor'?


7) Most of the measured variables are self-reported and are based on the survivors’ perceptions. This requires acknowledgement. For example the final paragraph of the Introduction should refer to perceived quality of information.

Answers to Review Question

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

The aims of the study and the specific questions asked need to be revised in the
lights of the comments below. The design is not capable of answering the questions as they are posed in the article.

2. Are the methods appropriate and well described?
The standard of English is a problem, except for the Conclusions. Several key sections are hard to follow. The description of the statistical analysis is particularly poor.
The statistical methods do not appear to be adapted to the type of variable and there are problems with the reporting and the number of analyses conducted.

3. Are the data sound?
The data themselves appear to be sound.

4. Does the manuscript adhere to the relevant standards for reporting and data deposition?
As stated above the language and the thoroughness of the description of methods and aims requires attention.

5. Are the discussion and conclusions well balanced and adequately supported by the data?
The conclusions unfortunately assume that the associations demonstrated by regression analyses imply that certain variables such as impairments and demographic factors ‘impact’ on quality of life domains. These conclusions are largely unfounded in view of the cross sectional nature of the study. All that has been demonstrated are the associations, not causation, impact or influence.

6. Are limitations of the work clearly stated?
Key limitations have not been included, see below.

7. Do the authors clearly acknowledge any work upon which they are building, both published and unpublished?
Yes

8. Do the title and abstract accurately convey what has been found?
The title and abstract should both clearly indicate that the study has demonstrated associations and not ‘effects’

9. Is the writing acceptable?
The standard of English is not acceptable. It is difficult to follow in places and could be a source of misinterpretation.

Revisions
In my view this paper requires major revision, but there may be data here that are worthy of publication after the points below have been attended to.

Compulsory Revisions
1) Redraft with attention to the standard of English.
2) Revise the title, abstract, introduction and discussion to clarify the nature of the design and the achievable aims and sustainable conclusions that this
methodology supports.

3) Review the regression analyses and re-analyses as necessary in view of comments received.

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

**Quality of written English:** Needs some language corrections before being published

**Statistical review:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**

'I declare that I have no competing interests'