

Reviewer's report

Title: Age at disability onset and health-related quality of life

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Reviewer: Denis Evans

Reviewer's report:

General

This manuscript has substantial potential value because of the relevance of the measure of health-related quality of life used and the very large sample size. In its present form the manuscript also has some very substantial limitations.

The number of subjects for which data are available is large: 73,867, of whom 11,905 met criteria for disability. The measure of health-related quality of life is the CDC-HRQOL-4, a brief but informative and widely used measure. The measure of disability is not without value, but is somewhat less informative: "Our working definition of disability was based on respondents saying "yes" to either of two questions: "Are you limited in any way in any activities because of any impairment of health problem?" or "Do you now have any health problem that requires you to use special equipment, such as a cane, a wheelchair, a special bed, or a special telephone?" (p. 6).

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

The major problem that I see with the manuscript as it is currently written is a conceptual one. The manuscript clearly wishes to address age and other factors related to disability onset, a concept that clearly implies a longitudinal view of the subjects experiencing disability with the ability to detect and study the beginning or onset of disability. That the manuscript is fundamentally concerned with the onset of disability is strongly emphasized throughout the manuscript from the Title to the Abstract and throughout the text. A major challenge in addressing this concept, however, is that the data available are not longitudinal, but cross-sectional; subjects are not observed longitudinally with direct detection of the onset of disability. Instead, the onset of disability must be inferred indirectly from cross-sectional data, a difficult undertaking. Except for a one-sentence notation of this conceptual problem in the Discussion Section (p. 11), the manuscript does not refer to it.

The severity of this conceptual problem is emphasized and intensified because the manuscript is exceedingly unclear about how this inference of onset is made from the available cross-sectional data. On p. 6 the manuscript specifies simply : "The primary predictor variable for these analyses was age at disability onset, calculated by subtracting the years the respondent had been living with a disability from the respondent's current age on the date of the interview." How the years the respondent had been living with disability was ascertained, the relation of this measurement to the current perception of disability in terms of its nature and severity, and the validity of this measure of duration of disability are totally unspecified.

The way in which the onset of disability is conceptualized and then inferred from cross-sectional data needs to be addressed much more directly, the measures for doing so need to be specified clearly, and the validity of these measures defended. Otherwise, the concept of onset of disability should be deleted from the manuscript, which would result in a fundamental change in the issues it addresses and its meaning.

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

Although participation in random-digit-dialing studies is difficult to summarize briefly and clearly, some effort to do so for the reader should be attempted, and references provided so that the interested reader can find more details. Similarly, a somewhat more informative brief description of the complex sampling techniques used (supplementing the reference to a web site) and how this complex sampling was considered analytically (other than mentioning the software package used) should be provided.

It is implied in the text (p. 8) but not clearly specified in the heading of Table 2 that these results are from a model predicting health status from all of the listed predictor variables considered simultaneously. This important point should be clarified.

Discretionary Revisions (which the author can choose to ignore)

What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

Level of interest: An article of importance in its field

Quality of written English: Acceptable

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

Declaration of competing interests:

I declare that I have no competing interests.