Reviewer's report

Title: Assessing the validity of the Global Activity Limitation Indicator in fourteen European countries

Version: 1
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Reviewer: Julio Cabrero-Garcia

Reviewer's report:

The Global Activity Limitation Indicator (GALI) is a global health indicator designed to monitor the functioning (activity limitations) of the population and is used to calculate the European Healthy Life Years indicator (life expectancy without activity limitations). So far, few studies (although with promising results) which have studied its validity. In this paper, the authors examine whether GALI is associated, as expected, with self-report measures of functional disability (ADL and IADL limitations) and functional limitations in the general population (over 15 years) from 14 European countries with data from the European Health Interview Survey (EHIS). A previous study, with a very similar approach but with SHARE data was limited to the population over 49 years old. Therefore, the inclusion of the population under 50 years, is the main contribution of this study.

Major compulsory revisions

Methods/General approach.

1. Some reservation regarding the hypothesis:

It seems, but please clarify, that the authors hypothesize that the association between ADL limitations and GALI will be greater than the association between IADL limitations and GALI, and that this will be so because ADL limitations measure the most severe disability level and IADL limitations measure less severe levels of disability. This means assuming that GALI is a measure of severe disability (ADL limitations) and less of intermediate disability (IADL limitations), which is questionable (perhaps even undesirable). Also, if both measures assess the same construct but at different levels, why not combine them into a single measure of functional disability?

2. The authors hope that the association between GALI and functional limitations will be less than with ADL and IADL limitations but the justification for this assumption is not entirely clear (although it may be reasonable). The disablement process (Verbrugge y Jette, 1994) is a very appropriate conceptual framework for this hypothesis: functional limitations are the immediate antecedents of disability but are not measures of disability (ADL and IADL limitations itself.)

Minor compulsory revisions

3. In Methods/Data it is said that “Comparison of the question wording and
responses categories revealed missing questions or comparability problems in some countries”. Please, you should clarify if you have excluded all countries and measures with a problem of comparability and, therefore, if in all included countries the selected measures are those that they had not any problem of comparability. Otherwise, why not perform a sensitivity analysis in the meta-analysis by grouping according to the degree of comparability of measures / countries included?

Methods/Measurements.

4. Please, although operational definitions of the three predictors are based on appropriate literature, it is necessary to indicate what is the rationale for proceeding differently in the case of functional limitations, in which severity is measured (vs. ADL and IADL, in which number of limitations independently of the level of severity is measured). Please, also you should indicate the possible range of scores of functional limitations (and scores of ADL and IADL limitations).

Methods/Measurements.

5. Measures of functional limitations commonly include some or most of the so-called Nagi’s items. The measure used in this study included 6 items, five of them are classic items of functional limitations, but one of them, "biting and chewing", no. Why has included this item?

Statistical methods

6. In the Statistical methods the authors say: “For every measure used to evaluate the GALI (ADL, IADL and functional limitations), a logistic regression model was fitted, adjusting for the effects of gender, age (measured in years) and significant interactions for all EU countries together”. Please, it necessary to clarify the expression “significant interactions for all EU countries together”.

7. Indicate, please, if in models with continuous predictors the linearity of the associations of these predictors with the response variable was examined.

8. In the fourth paragraph, the authors say: “Correlation in the level of disability across measures was observed in some countries: Hungary, Latvia and Slovenia displayed high levels of disability on the four measures; whilst Cyprus had amongst the lowest prevalence levels”. I do not understand the previous sentence: which are the correlations related, how they have been calculated, which were the results?

9. In the ninth paragraph, the authors say: “Variability in the odds ratios was intermediate for IADL (odds ratios varying from 8.2 to 26.3) and lowest for functioning (odds ratios varying from 4.2 to 11.7; 85% of the odds ratios comprised between 5.2 and 8.7)”. However, the values of I2 show the opposite: the greater variability of effect was observed in functional limitations.

Discretionary revisions

Statistical methods
10. Perhaps it would be interesting to briefly explain why two different strategies are followed, one with predictors as continuous variables to examine globally (in all countries together) the association between predictors and GALI, and another with the predictors as binary variables to examine the same associations but separately for each country (and to examine the heterogeneity of associations).

11. Because of the study relies mainly on cross-sectional relationships between a set of measures it would be useful to have correlations (Spearman) between these measures (predictors and GALI included).

Results

12. In 7 countries percentages of global activity limitations varied greatly among SILC data and data presented in the manuscript (EHIS). Please, try to find some explanation on this issue in the discussion.

Discussion

13. The authors compared their results with those of the study which used SHARE data and they found differences related to the heterogeneity of the results between countries. Instead of basing the comparison on statistical significance I suggest they based it on I2.

14. In comparison with data from SHARE, I am surprised that the associations between disability measures and GALI are lower in the subsample of over 50 years than in the entire sample (over 16 years), since measures of ADL and IADL were created for use with geriatric population (that is to say, elderly).

15. Did the most extreme values, which were observed in the associations (odds ratio) between disability measures and GALI, affect the countries in which were comparability problems of the question wording and responses categories?

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.