Title: A systematic review of the psychometric properties of disability instruments

Background:

Health condition

The condition of health to analyses through Patient Reported Outcome Measures (PROM) is disability and functioning according to WHO (World Health Organization) landmark which defines disability as “is an umbrella term for impairments, activity limitations, and participation restrictions. It denotes the negative aspects of the interaction between an individual (with a health condition) and that individual’s contextual factors (environmental and personal factors)” and functioning “is an umbrella term for body functions, body structures, activities, and participation. It denotes the positive aspects of the interaction between an individual (with a health condition) and that individual’s contextual factors (environmental and personal factors)” (1).

To determine disability and functioning status, the experts use different measurements such as Patient-Reported Outcome Measures (PROM), which are applied to know the patients’ perceptions around disability and functioning status, and they are recommended by WHO and experts(2).

Around the world, disability is estimated at 15% of the overall population, and in the future, it will increase. In Latin America, approximately 85 million of the population have disabilities, additionally, 1:5 households are in a situation of poverty. In Colombia, is estimated that 2, 45% which is 1,178,703 people have disabilities. It is distributed at 8,3% general diseases, 11,3% accident and 9,9% genetic alterations (3).

Intervention

For this systematic review, the intervention is made up of all types of patient-reported outcome measure (PROM) instruments, such as profiles, self-assessment, surveys, questionnaires, and assessments of disability and functioning, overall. These instruments could have been made a long time ago but the review is focused on the last 10 years because of is easier to compare the psychometric properties.

Comparison

Is the same that intervention but it has measurement standards defined by researchers

Objectives:

1. To perform the literature search which includes the formulation of eligibility criteria, developing of search, and selection of articles.

2. To evaluate the measurement properties of disability instruments.

3. To formulate recommendations of the best instruments to assess disability for people over 18 years of age based on their psychometric properties.

Methods:

Criteria for selecting studies for this review:

Participants/population

-People over 18 years of age need an assessment of functional status and disability. These people can have different health conditions with diverse grades of severity.

-People over 18 years of age need an assessment of functional status and disability. These people without health conditions.

-At least 50% of the sample included in the validation of the instrument must represent the population of interest in the study.

Intervention(s), exposure(s)

The review will include profile, self-assessment, surveys, questionnaires, and disability and functioning assessments, overall.

Comparator(s)/control

The review will include profile, self-assessment, surveys, questionnaires, and disability and functioning assessments, overall with measurement standards defined by researchers.

Study Design

- Validation study Independent of properties measurement analyzed.
- Study population of people over 18 years old to analyze disability and functioning which could include body functions and structures, activities and participation, and environmental factors.

Main outcome(s)

For this kind of review, the main outcomes are related to measurement properties such as content validity, internal structure, and remaining

measurement properties (reliability, error measurement, criterion validity, hypotheses testing for construct validity, and responsiveness). This taxonomy is proposed by COSMIN (Consensus-based selection of health Measurement Instruments).

Search methods for identification of studies:

The search will be carried out in databases and other sources of information. The databases will be Embase, Medline (Ovid), Scopus, Lilacs, Rehabilitation Reference Center (EBSCO), and BVS. The other sources of information will be Google Scholar and reverse snowball search or backward reference. The search strategy will build with four groups, the first of them related to assessment, evaluation, surveys, and questionnaires. The second group is people over 18 years old and keywords related to the target population; the third group is about Patient Reported Outcome Measures (PROM); finally, the fourth group includes reproducibility of results, psychometrics, and psychometric properties. The Boolean operator inside every group will be “OR” and between-group “AND”. Restriction of language in English, Spanish and Portuguese. The search on Google Scholar can be constructed with three combinations and the one that retrieves the most records will be selected. The snowball search will be reviewing the bibliography of articles included in this Systematic Review.

The screening by title and the abstract and full text will check by two reviewers and a third reviewer could resolve the discrepancies. The reason for the exclusion of articles will be reported after a review full text.

Software

Revman 5. 0. or Stata 16.0 or SPSS 25.0.

Data collection and analysis:

Data collection will have author and year, name of instruments, population characteristics, results on the measurement properties, additionally, interpretability (for instance, application time), and feasibility for each Patient Reported Outcome Measures (PROM) related disability and functioning assessment. On another hand, the researchers will show the evaluation of the measurement properties depends on quality; for instance, either sufficient, insufficient, or indeterminate. Finally, the summary table with level evidence according to GRADE.

Risk of bias (quality) assessment

The risk of bias assessment will follow the COSMIN methodology, which included:

- Bias checklist. To know which measurement properties are assessed in every article.
- To assess the methodological quality of studies according to each measurement property. It can be scored as poor, fair, good, or excellent, which indicates the quality of every measurement.

These assessments will be conducted by one reviewer and verified by a second reviewer. Additionally, the review will incorporate a domain of the GRADE approach to assess the certainly of articles.

Measures of treatment effect

It depends on the measurement properties reported in each article.

Unit of analysis issues

The unit of analysis is each article.

Assessment of heterogeneity

The heterogeneity will assess with the Higgins test.

Assessment of reporting biases

Funnel plot if more than 10 studies.

Data analysis

It depends on the possibility to synthesize quantitatively the results. If it is the case, it will make through meta-analysis for each measurement properties calculating weight means according to the number of participants.

Model

Random effects model.

Subgroups analyses

First it all, the researcher will consider the importance to develop a subgroup analysis according to the results. If it is the case, the analysis will be for age groups and type of diagnosis with a meta-regression.

GRADE

Only for primary outcomes.

Results

Results of search

It will show as an appendix: search strategy and PRISMA flow chart.

Description of included studies

It will have: characteristics of Patient-Reported Outcome Measures, population, characteristics of the included PROMs.

Results of the synthesis

Interpretability and feasibility of Patient-Reported Outcome Measures

Results of studies on measurement properties.

Summary or findings according to measurement properties.

Appendices

Author:

Rodríguez-Guevara, Camila. Universidad CES. PhD student in Epidemiology and Biostatistics.

Muñoz Rodríguez, Diana Isabel. Universidad CES. PhD Epidemiology and Biostatistics. Department of Physiotherapy.

Roa Urrutia, Pablo Esteban. Secretaria de Salud de Cali. M.Sc. in Epidemiology.

Montenegro Martínez, Gino. Universidad CES. PhD Public Health. Deparment Public Health.

Contribution of authors:

Rodríguez-Guevara, Camila

-Study design, data collection, data analysis, and interpretation.

- Involvement in redaction and revising manuscript

-Approval of a final version of the manuscript for publication

-Responsibility for integrity of all aspects of research.

Muñoz Rodríguez, Diana Isabel

-Study design, data analysis, and interpretation.

- Involvement in revising manuscript

-Approval of a final version of the manuscript for publication

-Responsibility for integrity of all aspects of research.

Roa Urrutia, Pablo Esteban

- Study design, data analysis, and interpretation.

- Involvement in revising the manuscript

-Approval of a final version of the manuscript for publication

Montenegro Martinez, Gino

- Involvement in revising the manuscript

-Approval of a final version of the manuscript for publication

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Table

Table 1. Search Strategy

Structure	Word	MESH Terms	Meaning	Synonyms
C	Auto-evaluación	Self-Assessment	Appraisal of one's own personal qualities or traits	Assessment, Self Self Assessment Self-Criticism
	Cuestionario	Surveys and Questionnaires	Collections of data obtained from voluntary subjects. The information usually takes the form of answers to questions, or suggestions.	Questionnaire Questionnaires Respondent Respondents Survey Surveys
	Evaluación de discapacidad	Disability Evaluation	Determination of the degree of a physical, mental, or emotional handicap. The diagnosis is applied to legal qualification for benefits and income under disability insurance and to eligibility for Social Security and workmen's compensation benefits.	It does not have synonyms
P	Joven adulto	Young adult	For a person between 19 and 24 years of age.	It does not have synonyms
	Adulto	Adult	Adults are of 19 through 44 years of age.	Adults
	Adulto	Middle Aged	An adult aged 45 - 64 years.	Middle Age
	Adulto mayor	Aged	A person 65 through 79 years of age	Elderly
	Adulto mayor	AGED, 80 AND OVER	For a person older than 79 years	Elderly
T	Instrumentos de resultado informadas por el paciente (PROM)	Patient Reported Outcome Measures (PROM)	Assessment of the quality and effectiveness of health care as measured and directly reported by the patient.	Patient Reported Outcome Patient Reported Outcome Measure Patient Reported Outcomes Patient-Reported Outcome Patient-Reported Outcomes
M	Psicometría	"psychometrics"	Assessment of psychological variables by the application of mathematical procedures.	It does not have synonyms
	Propiedades psicométricas	Psychometric properties (Término libre)	Assessment of psychological variables by the application of mathematical procedures.	It does not have synonyms
	Reproducibilidad de resultados	Reproducibility of Results	The statistical reproducibility of measurements (often in a clinical context), including the testing of instrumentation or techniques to obtain reproducible results. The concept includes reproducibility of physiological measurements, which may be used to develop rules to assess probability or prognosis, or response to a stimulus; reproducibility of	Face Validity Reliability (Epidemiology) Reliability and Validity Reliability of Result Reliability of Results Reproducibility Of Result Reproducibility of Finding Reproducibility of Findings Test-Retest Reliability Validity (Epidemiology) Validity of Result Validity of Results

			occurrence of a condition; and reproducibility of experimental results	
	Psicometría	"psychometrics"	Assessment of psychological variables by the application of mathematical procedures.	It does not have synonyms

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