Validation evidence of self-reported measures for healthcare resource utilisation in adult populations: a systematic review

MSR102

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BACKGROUND

- **Healthcare resource utilization** data is crucial to understand the economic and social burden of illnesses, reflect treatment procedures and resource inputs, evaluate the costs and effectiveness of interventions, and facilitate healthcare policy and planning decisions.
- **Administrative data**, recorded in electronic systems of hospitals or insurance entities, is considered most accurate in reflecting service utilization. However, it often faces accessibility issues due to data security and privacy concerns, and can be costly and time-consuming to collect. Administrative data is usually single source and fails to cover private services, family care, out-of-pocket expenses, and indirect costs.
- **Healthcare utilization scales (HUS)** are widely used as alternatives, offering easy administration, direct reflections from subjects, and inclusion of services not covered by administrative systems.
- Despite the development of numerous HUSs, **many lack validity and accuracy**. The reliability of self-reported data can vary by service types. Factors such as participant characteristics, questionnaire administration, design, and item definition can also affect the psychometric properties of these scales.
- Therefore, updated evidence on **high-quality validation studies** is needed to address methodological biases, improve cross-study comparisons, and standardize healthcare utilization measures.

OBJECTIVES

- This study aims to synthesise the **validation evidence** of existing scales and questionnaires on healthcare resource utilisation.

METHODS

- **Protocol**: PROSPERO CRD42024546296, following Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) and Consensus-based Standards for the selection of health Measurement Instruments (COSMIN).
- **Literature search**: Medline, EMBASE, PsycINFO, CINAHL, and Health and Psychosocial Instruments databases. Additional instruments and publications were hand-searched from Database of Instruments for Resource Use Measurement.
- **Search terms**: “resource”, “utilization”, “questionnaire” and “validation”.
- **Timeframe**: Jan 1990 to May 2024, with no language restrictions.
- **Inclusion criteria**: studies reporting the development, psychometric assessment, or validation of HUSs in adults.
- **Exclusion criteria**: studies investigating instruments not primarily for resource utilization, using unstructured measures, collecting data from health professionals.
- **Data extraction:** study design, instrument design, and validation methods. Validation evidence includes: (1) **internal reliability**, (2) **test-retest and interrater** reliability, (3) **face/ content validity**, (4) **structural validity**, (5) **construct validity**, (6) **structural/ factorial validity**, (7) **criterion validity**, and (8) factors associated with psychometric properties.
- **Quality assessment**: COSMIN risk of bias checklist with 1o boxes. Each criterion in checklist was rated by a 4-point scale, and the quality of each box was determined by the lowest criteria rating in that box.
- **Data synthesis**: Extracted data were synthesized narratively and summarized in tables and figures.

RESULTS

- **Study inclusion**: Of 5626 identified records, 114 articles were finally included in analysis (Figure 1).
- **Study characteristics**: Of 114 articles, 54% and 32% were conducted between 2001-2010 and 2011-2024. Most studies were from European or north American countries (85%), non-institution settings (98%) and non-trial designs (79%).
- **Scale characteristics:** Of the 87 HUS, 81% were reported by **patients**, while 23% also involved carers.
- Over half of scales targeted at **specific conditions** (e.g., neurocognitive, psychiatric, musculoskeletal diseases and cancer).
- Beside **medical services** (87%), these HSUs also evaluated **social care** (45%), **caregiving time** (25%) and **productivity loss** (36%).

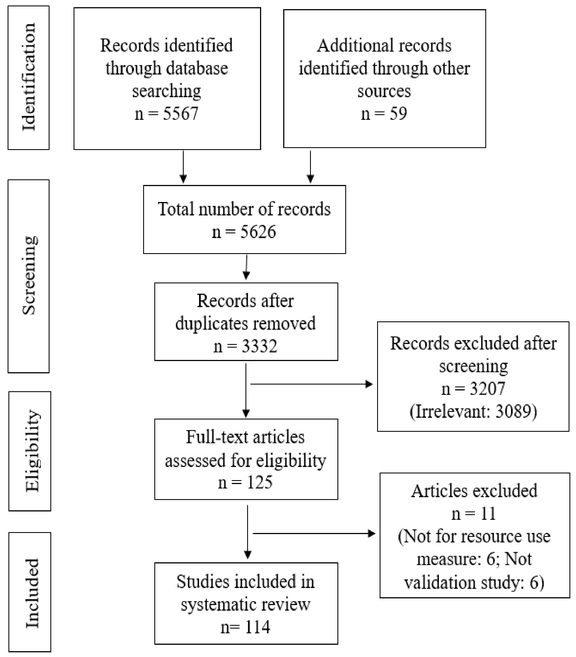

Fig 1. Study selection

RESULTS

- **Validation:** Criterion validity (60%) was most investigated, followed by content (41%), cross-cultural (40%) and construct (31%) validity. Structural validity, internal consistency, measurement error, and responsiveness were least reported (<5%).
- Only **one-third (37%)** scales demonstrated sufficient criterion validity with quality evidence, while the numbers were 17 (20%), 14 (16%) and 6 (7%) for construct, content and cross-cultural validity, respectively.
- **Associative factors**: demographics, service types, application settings, recall periods.
- **Example HUSs** with acceptable criterion validity: (1) RUD (Resources utilization in dementia), (2) CSSRI (Client Socio-Demographic & Service Receipt Inventory), (3) FIMA, (4) iPCQ (iMTA Productivity Cost Questionnaire), (5) ModRUM (Modular resource-use measure), (6) UAC (Utilization and Cost Methodology), etc.

CONCLUSIONS

- **Numerous HUSs** with potential for satisfactory validity are available for resource use measurement in clinical and health economic studies.
- However, researchers should **consider** the constructs, target population and condition, and application contexts in practice, as subtle variations can lead to considerable variations in HUS performance.

ACKNOWLEDGEMENT

- The Chinese University of Hong Kong - Research Data Management Development Fund (Round 2) (Ref: 4730357).

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