Poster #: SA80

Data Extraction Templates in Systematic Literature Reviews: How Systematic Are We?

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Background

- Systematic literature reviews (SLR) are the foundation informing clinical and cost-effectiveness analyses in healthcare decision-making.
- Established guidelines have encouraged the use of standardised data extraction templates (DET) to guide extraction, ensure transparency in information collected across the studies and allow qualitative and/or quantitative synthesis of findings.
- However, specific guidance on data extraction is restricted to general study and patient characteristics and mainly linked to interventional (trial-based) SLRs.

Objective

- This study aimed to summarise information from previously published DETs or guidance documents on the extraction of relevant data elements from indexed literature and established organisations.

Key Results

- The DECiMAL guide was the most comprehensive and detailed extraction guidance identified, providing clear recommendations for the type and format of data to be extracted for the purposes of complex meta-analyses (MAs).[1] Checklists such as PRISMA 2020[2] and CHEERS 2[3] should further direct the development of standardised items to be included in the templates.

Conclusions

- Despite the global recognition to streamline SLRs toward a 'living' approach, with always up-to-date evidence, and the urgency to improve data extraction accuracy, limited data extraction guidance by SLR topic was found from individual publications.
- Establishing minimum requirements for data extraction per SLR topic will facilitate comparison of results across different SLRs and increase transparency in their findings.
- It will also enable researchers to use previously conducted SLRs for future updates which will minimise research waste.

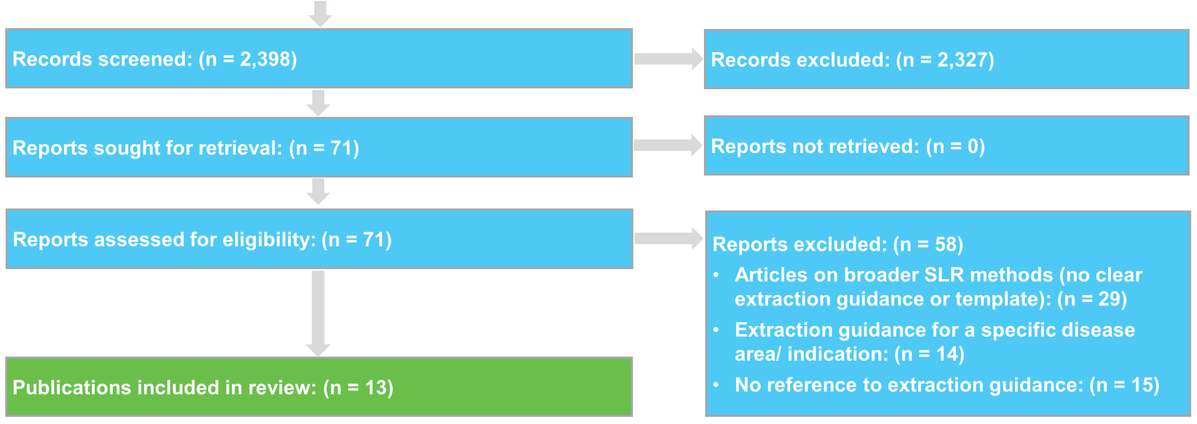
Methods

- A comprehensive literature review using pre-defined criteria was conducted on 16 May 2022 to identify DETs or guidance documents on data extraction elements across several sources: Embase, MEDLINE, key conferences, relevant research organisations, and HTA bodies. No time restrictions were applied.
- Searches of key organisation websites (NICE, SMC, CADTH, pCODR, IQWiG, PBAC,JBI, ICER, AHRQ, Cochrane, CRD, and NAM) and a broad Google search were also conducted, along with a snowballing approach from the included peer-reviewed publications.
- Screening was conducted by a single reviewer. Records were included if they provided a DET or discussed data elements that should be considered in a DET.
- Data extracted for relevant records included the citation, type of SLR discussed, extraction elements and their rationale, and recommendations for DET development (if DET guidance was discussed).
- Data were extracted by one reviewer and checked for accuracy by a second reviewer.

Results

- Thirteen publications were identified and eight of those provided guidance and/or templates for data extraction of traditional HTA topics, such as clinical, economic, humanistic and epidemiology reviews. Two publications included guidance and/or a template for the extraction of MAs/NMAs and one included guidance for the extraction of umbrella reviews (i.e., SLRs of SLRs) (Figure 1).

Figure 1. PRISMA diagram



- Most guidance or templates addressed specific SLR topics, with only a few publications covering SLRs more generally. NICE and JBI provided the most comprehensive guidance. Clinical and economic SLRs were the most used topics given their frequent use in the medical and health economics and outcomes research fields (Figure 2, Table 1).

Figure 2. Extraction templates (A) and guidance (B) for specific SLR types

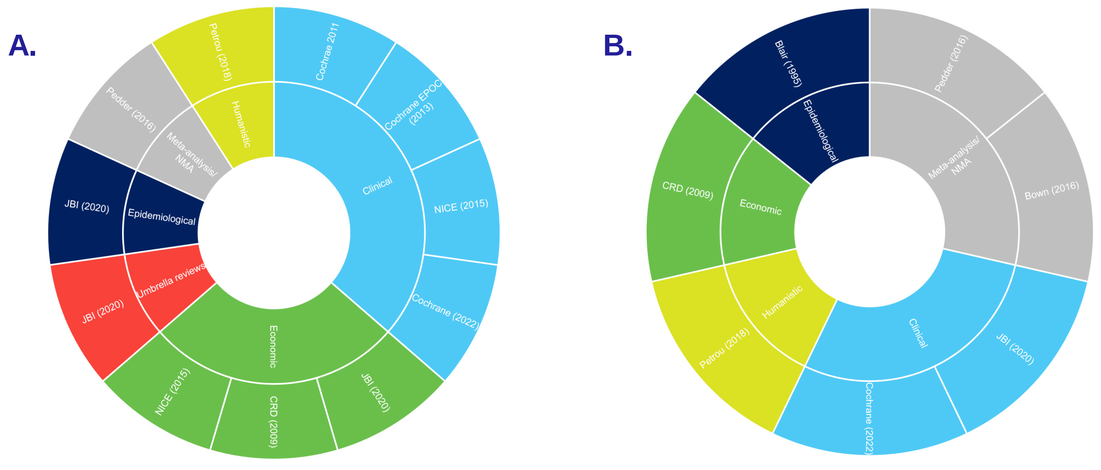


Table 1. Summary of extraction elements and guidance per SLR type

Clinical (no MA)	Clinical (with MA)	Humanistic	Economic	Epidemiological
Study design and characteristics; patient allocation, follow-up details				
• Randomisation method & blinding (if RCT), selection techniques for NRS, duration of study • Country setting, inclusion & exclusion criteria	• Study design • Country setting, inclusion & exclusion criteria	• Type of RWE study or economic model • Country setting, inclusion & exclusion criteria	• Study design & data source • Country setting, inclusion & exclusion criteria • Defined targeted & at-risk populations, case selection	
Treatment characteristics				
• Intervention, comparator, route of administration, dose & frequency, treatment duration	• Not stated	• Intervention, comparator, route of administration, dose & frequency, treatment duration	• Not stated	
Patient characteristics				
• Number of patients by treatment group, loss to follow-up, baseline characteristics	• Number of patients by treatment group (randomised, analysed), loss to follow-up, baseline characteristics	• Respondent type, disease & baseline characteristics	• Number of patients by treatment group, baseline characteristics	• Number of patients by treatment group, loss to follow-up, baseline characteristics
Presentation of outcomes				
• Definition of outcomes, units, scales, power & effect size, assessment timepoints	• Arm-level effects: number of patients & events (1st & total), discontinuations • Relative effects for compared treatments • Binary data: numbers & proportions • Continuous data: consistent units, baseline values & change from baseline preferred • Rate data: number of patients at risk • Time-to-event data: availability of Kaplan-Meier curves	• Quality-of-life scales or tools: e.g., EQ-5D, 16D, HUI2, HUI3 • Utility values: point estimates	• Study results • Results of measure of uncertainty	• Prevalence, incidence; point estimates, time period • Scales or tools
Analytical methods				
• Not stated	• Direct valuation: time trade-off, standard gamble, discreet choice of experiment • Indirect valuation	• Model type & characteristics: time horizon, discount rates, perspective, uncertainty • Model inputs: data sources, cost data, benefit measure	• Dependent variables • Method of data analysis	
Technical details/processes				
• Separate rows for outcomes & arm-level data • Emphasis on uncertainty	• Valuation method	• Not stated		
Measures of uncertainty				
• Not stated		• Statistical methods dealing with uncertainty	• Variance in estimates, method to control confounding	
Quality				
• Risk-of-bias assessment	• Response quality • Quality appraisal	• Quality appraisal	• Not stated	

Abbreviations

AHRQ, Agency for Healthcare Research and Quality; CADTH, Canadian Agency for Drugs and Technologies in Health; CHEERS, Consolidated Health Economic Evaluation Reporting Standards; CRD, Centre for Research and Dissemination; DECiMAL, Data Extraction for Complex Meta-Analysis; DET, data extraction table; HTA, health technology assessment; HUI2/HUI3, Health Utilities Index 2/3; ICER, Institute for Clinical and Economic Review; IQWiG, Institut für Qualität und Wirtschaftlichkeit im Gesundheitswesen; JBI, Joanna Briggs Institute; MA, meta-analysis; NAM, National Academy of Medicine (formerly Institute of Medicine); NICE, National Institute for Health and Care Excellence; NMA, network meta-analysis; NRS, non-randomised study; PBAC, Pharmaceutical Benefits Advisory Committee; pCODR, pan-Canadian Oncology Drug Review; PRISMA, Preferred Reporting Items for Systematic Reviews and Meta-Analyses; RCT, randomised control trial; RWE, real-world evidence; SLR, systematic literature review; SMC, Scottish Medicines Consortium

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