**OBJECTIVES**

This work assessed the transparency and replicability of manual methods with comparison to software-assisted replication for search and analysis of published systematic literature reviews (SLRs) and network meta-analyses (NMA).

**METHODS**

We attempted to replicate the search results and analyses of four previously published NMA studies from the United States and Europe on multiple myeloma (MM), plaque psoriasis (PP), type 2 diabetes mellitus (T2DM) and multiple sclerosis (MS) (NMA). Based on the published search criteria, we identified the articles that would be eligible for analysis. Software-assisted extraction and analyses were used to record and store decision made at each step of conducting the SLRs and NMAs. Analytic replication results were compared to the published results.

**RESULTS**

The original SLR identified 77 included studies: 9 in MM, 33 in MS, 28 in PP, 7 in T2DM, while the replication of these search and analyses relied on reading the original publications and attempts to recreate the steps taken for inclusion or exclusion with a high level of transparency. The replication of these search and analyses included 76 studies: 8 in MM, 33 in MS, 28 in PP, 7 in T2DM. The replication of these search and analyses relied on reading the original publications and attempts to recreate the steps taken for inclusion or exclusion with a high level of transparency. The replication of these search and analyses included 76 studies: 8 in MM, 33 in MS, 28 in PP, 7 in T2DM.

**CONCLUSIONS**

The aim of this study was to see how closely we could replicate the results of search, and separately, analyses of SLRs and NMAs.

**INTRODUCTION**

Systematic literature reviews (SLRs) and meta-analysis, including network meta-analysis (NMA), are key components to inform and guide medical practice, health policy, and payer decision-making. The processes to conduct these are fairly well understood but not uniformly performed. Investigators start with a well-defined research question and craft the search parameters used by the patient, intervention, comparator, and outcome (PICO) format. They then search databases for a particular time period, screen the results, assess the evidence, and perform the analysis. The key issue for replication are the search and analysis portions, as these permit oversight for decision-making and replication of these efforts.

Traditional methods for conducting SLRs and NMA use LexisNexis Academic, Ovid Medline, and PubMed as a baseline for searching high-impact gray literature and other sources. These four NMA were included in the original. We sought to develop a systematic approach from the published literature that would permit investigators to replicate the steps taken for inclusion or exclusion with a high level of transparency.

Recent advances in computer technology have enabled high-fidelity representations of data extracted from published literature that can be used in conducting SLRs and NMA.

Despite these advances, many organizations rely on manual methods and technologies for preparing necessary documents for submission to NMA agencies, obscuring proper interpretation and replicability.

The aim of this study was to see how closely we could replicate the results of search, and separately, analyses of SLRs and NMAs.

**METHODS**

**Search Replication**

We identified four SLRs with NMA studies from the literature that represented oncology (MM), immunology (PP, MS), endocrinology (T2DM), and neurology (MS). The intention was to provide a broad array of clinical questions that have a recognized impact in both prevalence and healthcare costs. We also sought representative publications from the United States and the United Kingdom.

From these publications, we used the information that described the PICO strategies to create search strings to run on the pre-specified libraries, data sources, and time frame. We complemented these search strings with hand searches through relevant grey literature and other references.

**Analysis Replication**

Based on the methods described in the publications, we attempted to recreate the analytic results, using the same articles identified in each search. The replication of these search and analyses relied on reading the original publications and attempts to recreate the steps taken for inclusion or exclusion with a high level of transparency.

**RESULTS**

Table 1 displays the discrepancies resulting from replicating the search based on PICO description.

**LIMITATIONS**

In this analysis, we were not able to replicate the search results for the inclusion of all or some of the agents identified in the original NMA. It is possible that further research could improve our understanding of the factors that influence the results of NMA for Multiple Myeloma, Multiple Sclerosis, Plaque Psoriasis, and Type 2 Diabetes Mellitus.

**REFERENCES**


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