

Identification of data Sources for Indirect Comparisons: Methodology of a PRISMA-Aligned SLR Enhanced by Human-Supervised LLM Automation

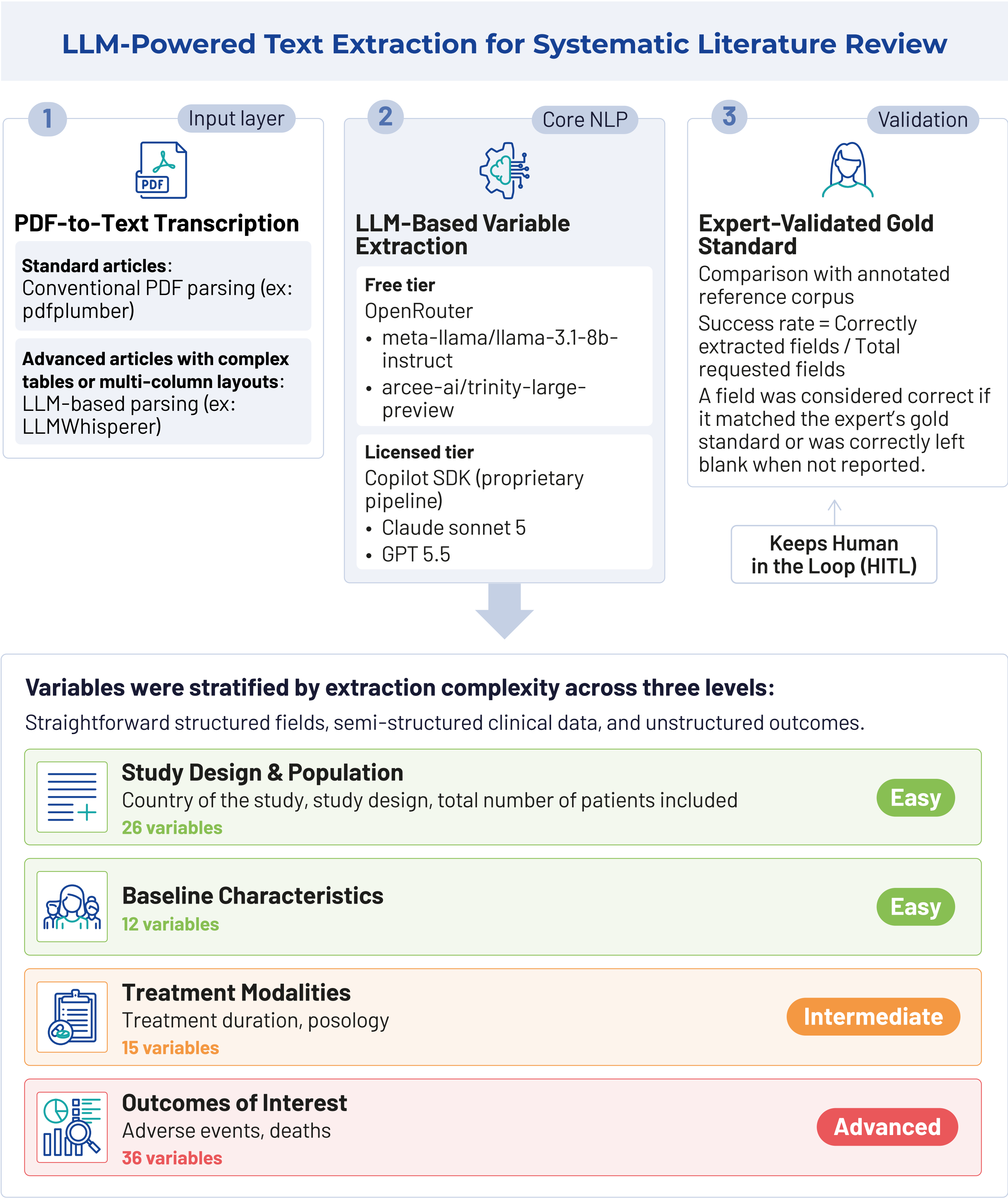
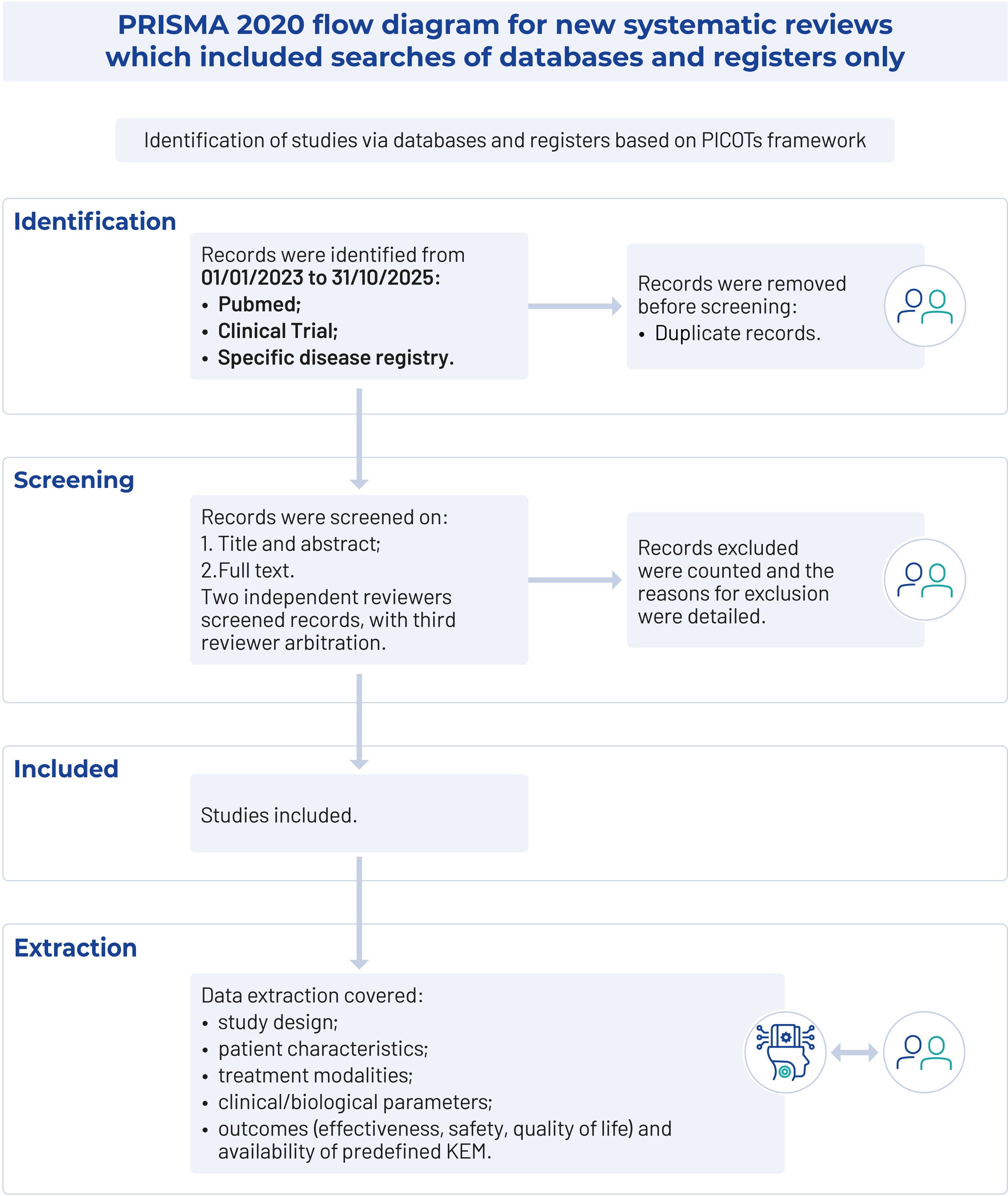
BACKGROUND

Guidelines emphasize the need for a systematic literature review (SLR) with transparent selection criteria and a rigorous assessment of bias to identify relevant data sources and key effect modifiers (KEM) for indirect treatment comparisons (ITC).

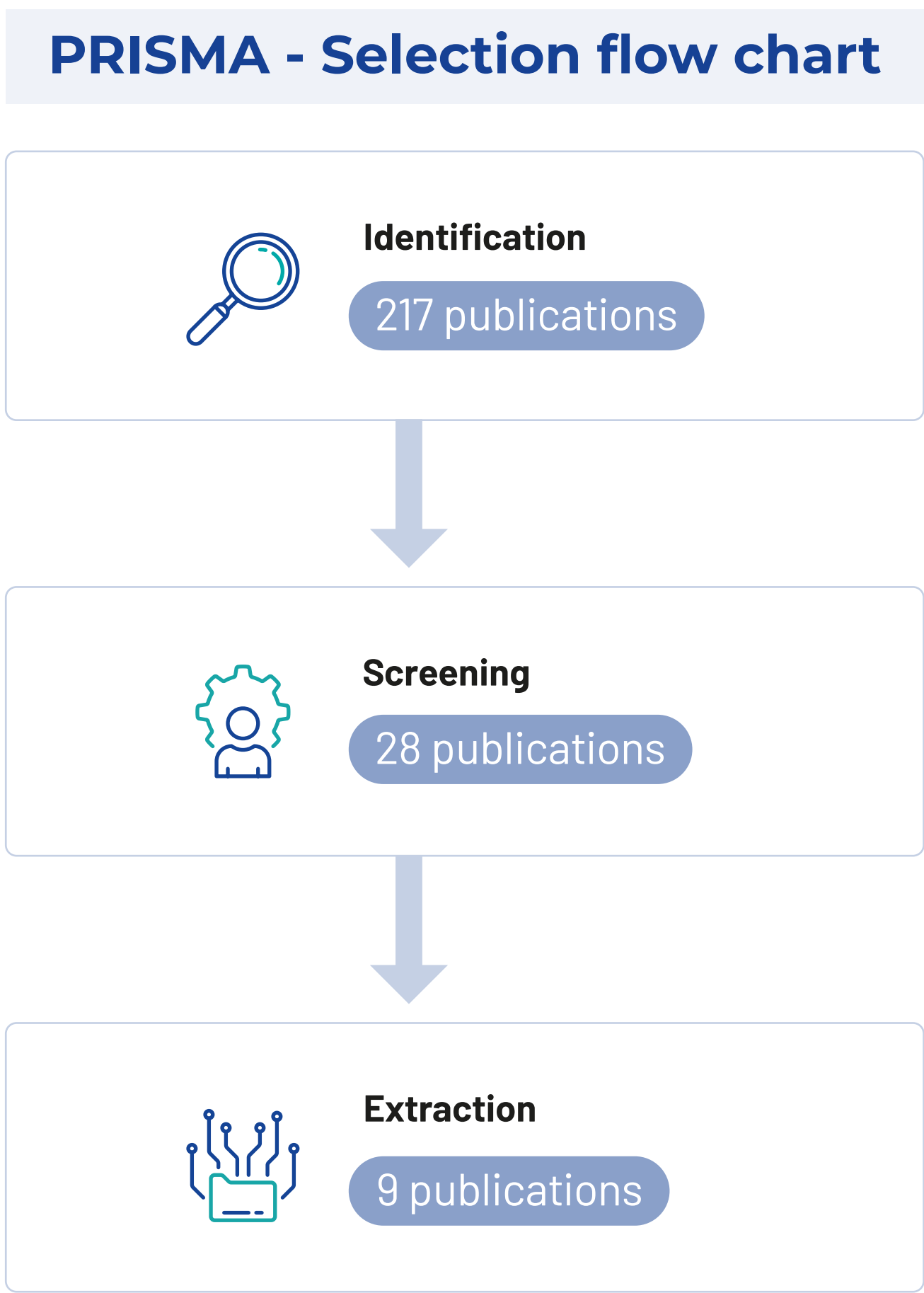
Given the volume and the heterogeneity of available evidence, automation approaches—such as large language models (LLMs)—may support SLR process, data extraction and evidence synthesis.

The objective of this pilot study was to develop and assess automation approaches to conduct SLR, supporting comparative analyses (ITC or external control arm).

METHODS



RESULTS



Extraction Performance: Human vs. LLM			
Human Extraction	LLM-Assisted Extraction		
	Free tier arcee-ai/trinity-large-preview	Licensed tier GPT 5.5	Licensed tier Claude sonnet 5
Time spent on 9 publications Study design & description Patients characteristics at baseline Treatment modalities Outcomes of interest	≈ 32 hours Manual review & entry		
	Gold Standard / Reference		
	≈ 15 minutes Free: arcee-ai/trinity	≈ 25 minutes Licensed: GPT 5.5	≈ 17 minutes Licensed: Claude sonnet 5
	65%	95%	95%
	28%	60%	60%
	23%	50%	80%
	10%	17%	50%
Success rate: <20% ≥20% - <60% ≥60%			

CONCLUSION

This pilot study helped assess the interest and limits of automation approaches to conduct SLR, notably for the identification of relevant data sources and KEM to support indirect treatment comparisons. However, the performance of LLM-based approaches for SLR may vary depending on the type of LLM used, with more advanced paid versions generally expected to provide higher accuracy and more reliable outputs than free versions.

Abbreviations

ICT: Indirect Treatment Comparisons; KEM: Key Effect Modifiers; LLM : Large Language Models; PICOTs: Population, Intervention, Comparator, Outcome, Timing, setting; SLR: Systematic Literature Review