

# Psychotropic Medications Use and Hip Fracture Risk in Community-Dwelling Older Adults: A Nested Knowledge Assisted Meta-Analysis

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## PLAIN LANGUAGE SUMMARY

**Why we performed this research?** To update evidence on hip fracture risk associated with psychotropic drug usage in community dwelling older adults

**How we performed this research?** An AI Nested Knowledge-assisted rapid systematic review of observational studies was conducted using PubMed and Embase

**What were the findings of this research?** Both antidepressants and antipsychotics were associated with increased hip fracture risk

**What are the implications of this research?** Supports cautious prescribing and fall-prevention strategies in community dwelling older adults

## PURPOSE

- Falls in older adults drive major morbidity, mortality, and healthcare costs [1–3].
- Psychotropic drugs are widely prescribed despite known fall-related risks [4].
- This AI-assisted rapid review examines psychotropic use and hip fracture risk in community dwelling older adults to inform clinical and policy decisions.

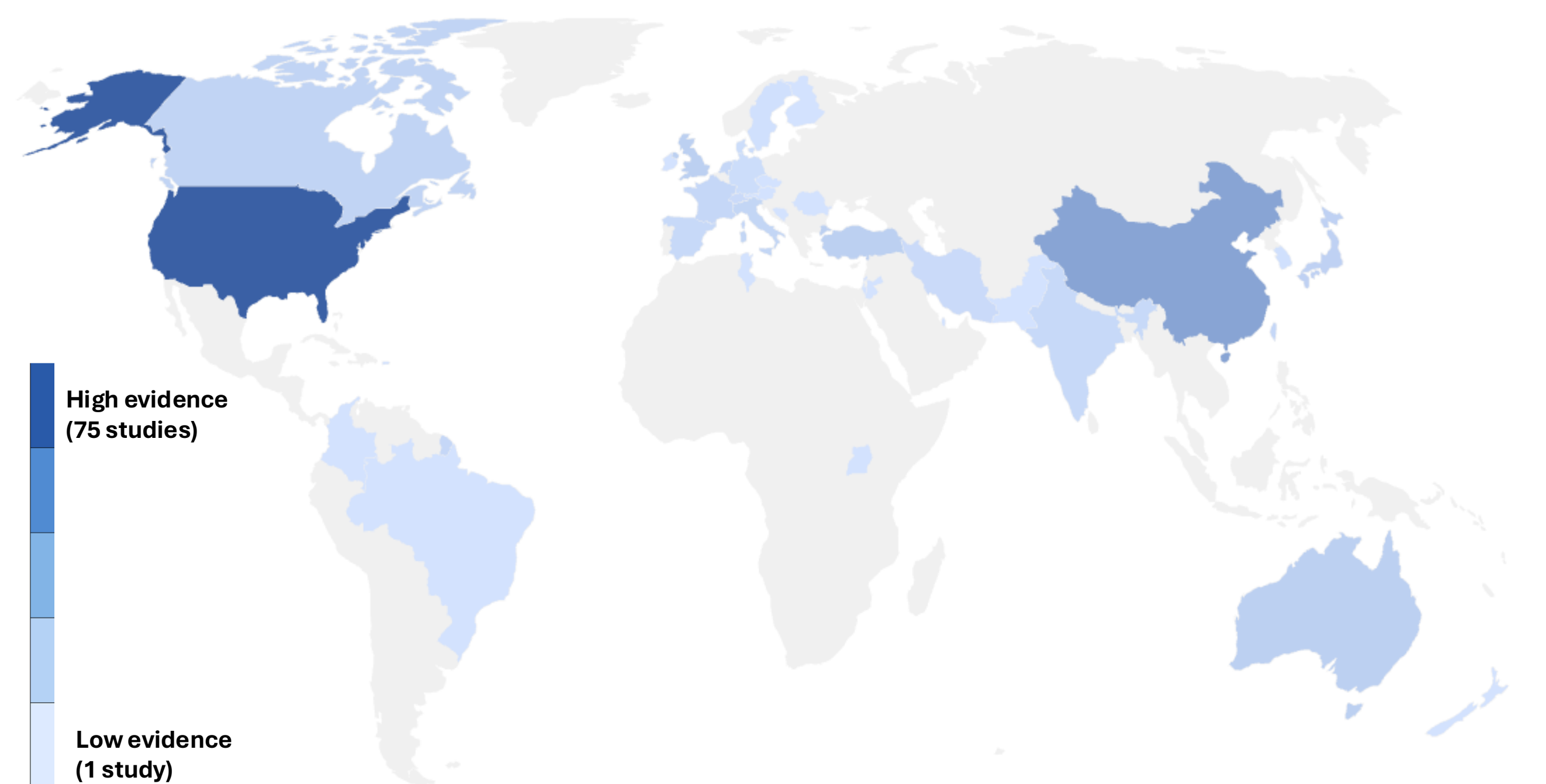


Figure 1: Geographic distribution of evidence

## METHODS

- Rapid systematic review conducted using the Nested Knowledge AI platform.
- Database search:** PubMed and Embase
- Inclusion:** Observational studies from 1987 to 2025 on hip fracture risk and antidepressant or antipsychotic use community dwelling older adults, aged  $\geq 65$  years.
- Effect estimate:** Random effect model to calculate odds ratios (ORs)
- Study quality:** Newcastle-Ottawa scale (NOS)

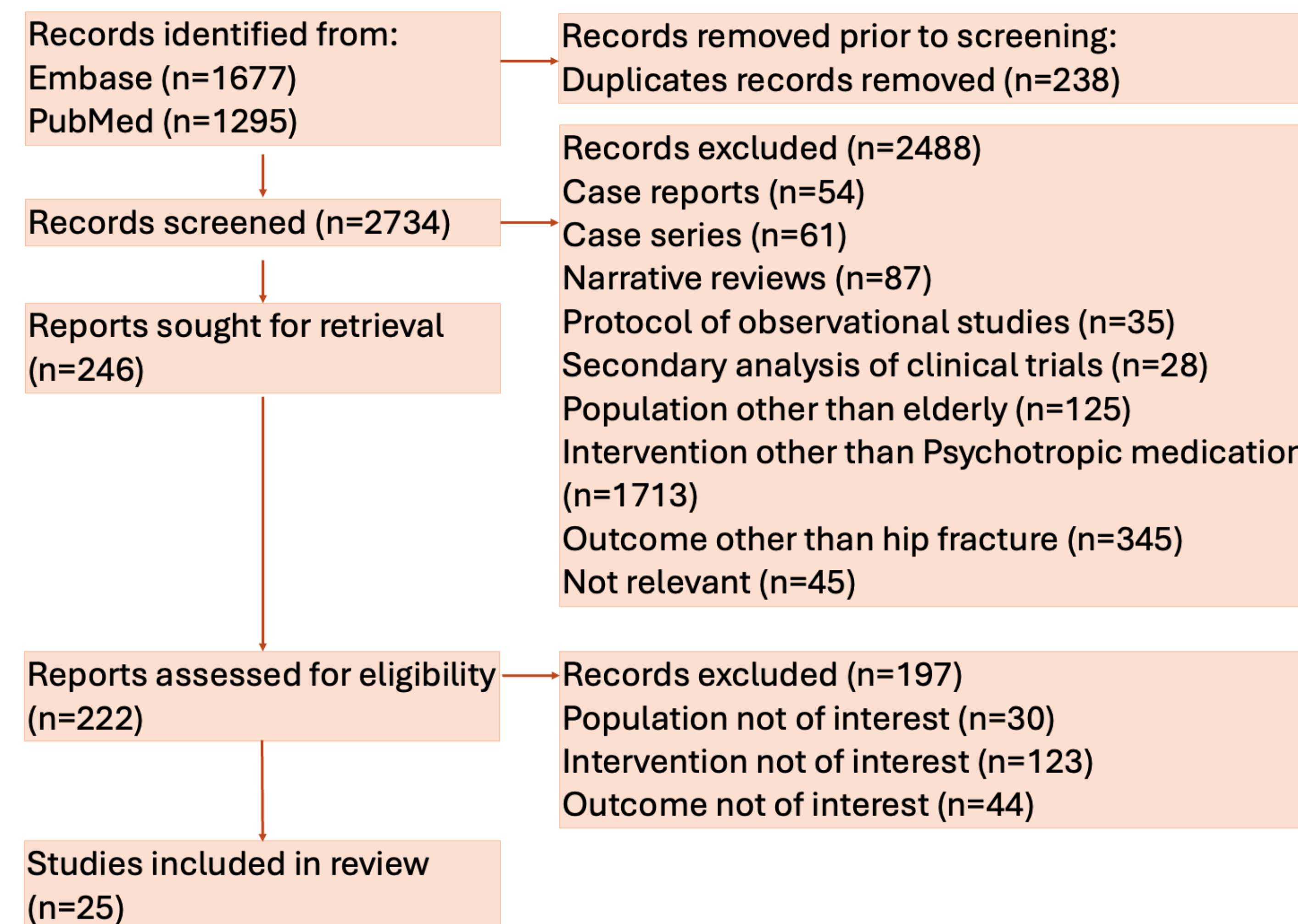


Figure 2: Study selection, PRISMA flowchart

## RESULTS AND DISCUSSION

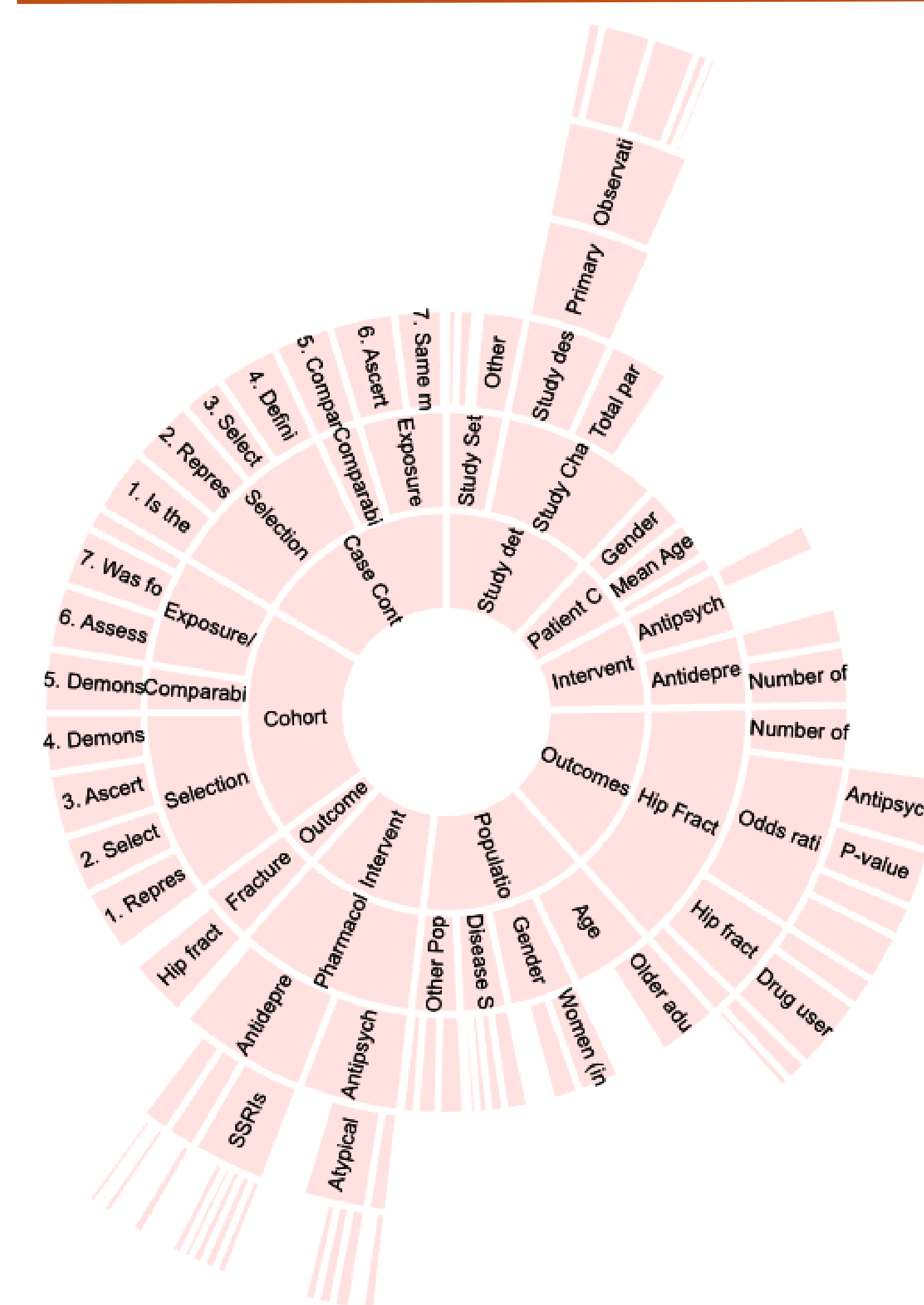


Figure 3: Sunburst diagram created via Nested Knowledge

Literature search identified **2,972 studies**

**25 studies** involving **>100,000 subjects** reported odds ratios for hip fracture risk

**Study quality assessment:** Moderate quality: 23 studies, High quality: 2 studies

**Psychotropic medications** significantly increased hip fracture risk (Figure 4, Table 1)

**Methodological contribution**  
AI-enabled Nested Knowledge platform improved rigor, transparency, and efficiency of evidence synthesis

Initial learning curve may be challenging for less technology-savvy users.

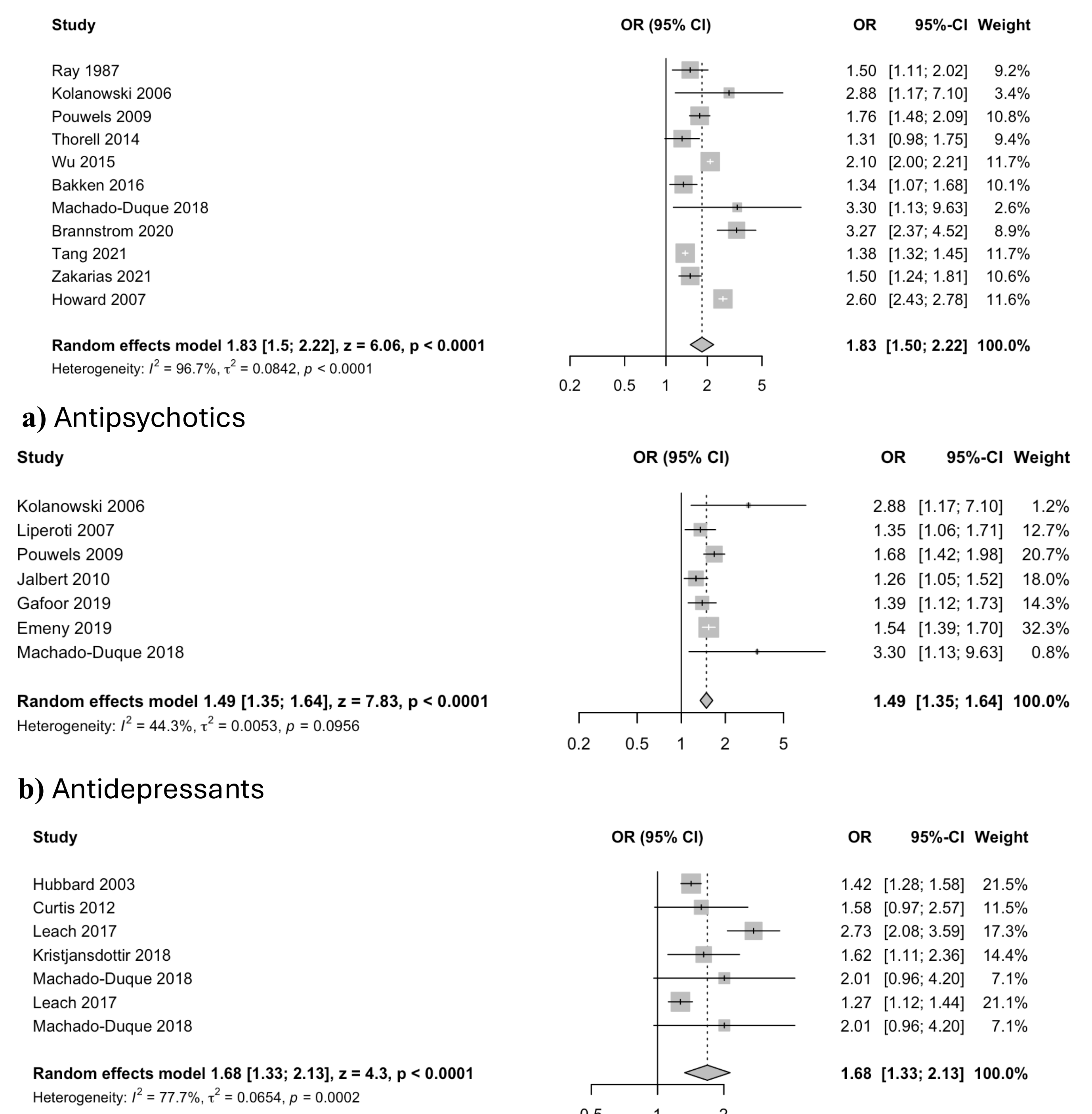


Figure 4: Forest plot summarizing effect estimates for hip fracture risk associated with psychotropic medications.

Drug Class	Number of studies	Odds Ratio (OR)	95% CI	p-value	NOS score
<b>Antipsychotics</b>					
Overall	14	1.83	1.50–2.22	<0.001	5-7
First-generation	5	1.64	1.39–1.94	<0.001	6-7
Second-generation	6	1.37	1.24–1.54	<0.0001	6-7
<b>Antidepressants</b>					
Overall	8	1.49	1.35–1.64	<0.0001	5-7
Selective Serotonin Reuptake Inhibitor	7	1.68	1.33–2.13	<0.0001	6-7
Tricyclic Antidepressant	4	1.28	1.16–1.42	<0.0001	6-7

Table 1. Summary of evidence: Association between psychotropic use and hip fracture risk in community dwelling older adults

## CONCLUSIONS

- Findings highlight cautious prescribing of psychotropic medications in older adults at risk of falls or fractures, alongside targeted fall prevention strategies.
- Use of NK AI, with appropriate training, may improve efficiency of screening and data extraction in evidence synthesis.

## REFERENCES

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