

Berihun Dachew¹, Yitayish Damtie¹, Getinet Ayano¹, Rosa Alati^{1,2}
¹School of Population Health, Curtin University, Australia; ²Institute for Social Sciences Research, The University of Queensland, Brisbane, Australia

Paternal smoking was associated with a **22%** increased risk of ADHD in children (RR=1.22, 95% CI: 1.12, 1.33). Maternal smoking may confound the observed association.

BACKGROUND

- Attention-deficit/hyperactivity disorder (ADHD) is the most common childhood-onset neurodevelopmental disorder.
- Its global prevalence is 3.1% in adults and 8% in children and adolescents.
- No single known cause for ADHD – both genetic and environmental factors contribute to its development.
- Smoking rates are higher among men than women worldwide (36.7% vs. 7.8%).
- The association between paternal smoking and ADHD in offspring is not yet well established.

METHODS

- We used a systematic review and meta-analysis methods.
- Both conventional and cumulative meta-analyses were conducted.
- CINAHL, Embase, PsycINFO, PubMed, Scopus, and Web of Science were systematically searched from inception until 15 March 2024.
- Pooled odds ratios with 95% confidence intervals (CIs) were calculated using a random-effects model.
- Heterogeneity among studies was assessed using the I² test.
- Publication bias and small study effects were evaluated using funnel plots and Egger's test.
- Sensitivity and subgroup analyses were also performed.

RESULTS

- Twenty observational studies, involving over 294,236 study participants from 16 different countries, were included.
- We found that paternal smoking was associated with a 22% increased risk of ADHD in children (RR=1.22, 95% CI: 1.12, 1.33).
- This association was only evident in studies that did not account for maternal smoking (OR=1.23, 95% CI 1.10, 1.38, n = 8).
- No increased risk of ADHD was found in studies that adjusted for maternal smoking (OR=1.14, 95% CI: 0.98, 1.33).

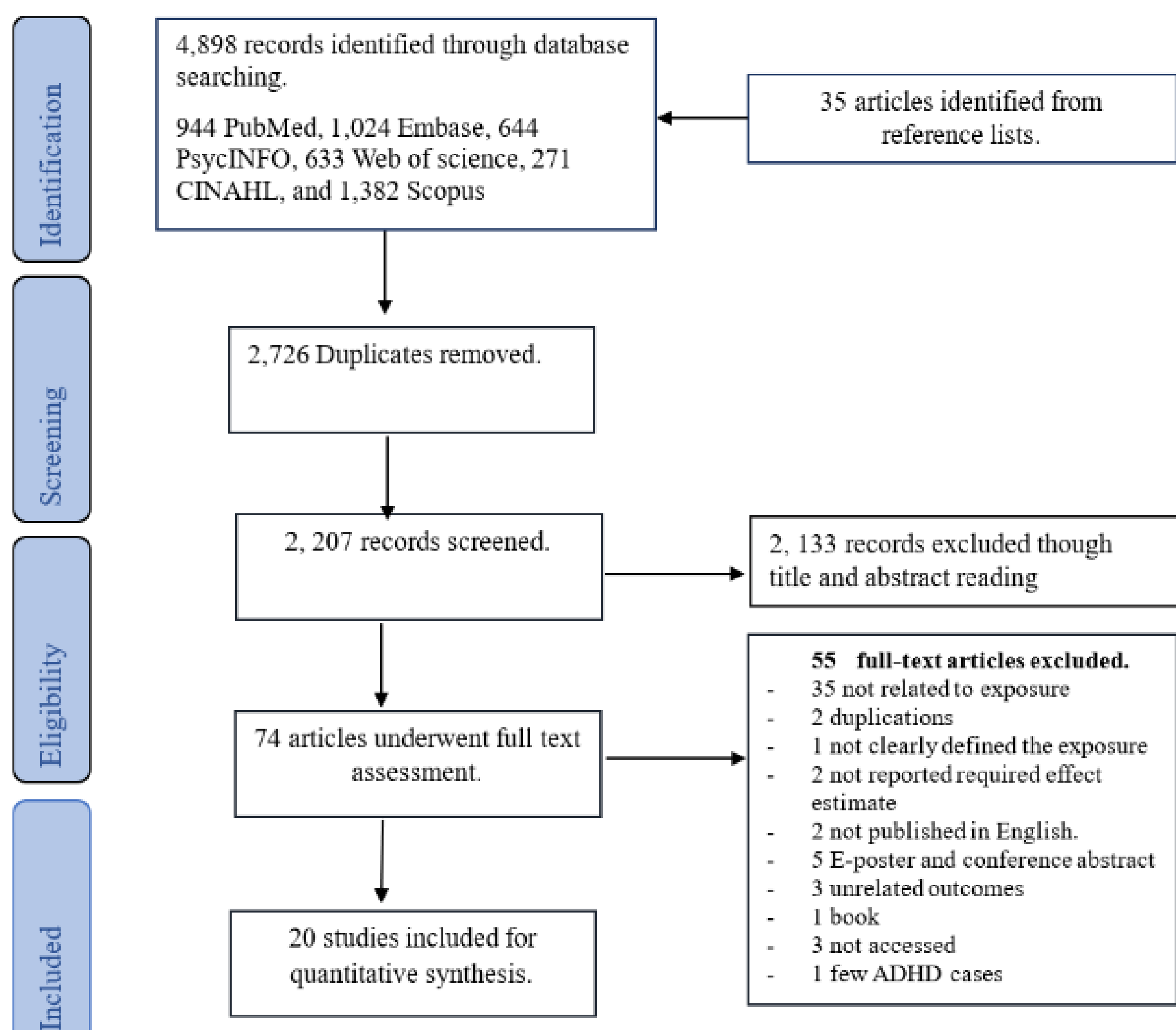


Figure 1. PRISMA flow diagram

RESULTS CONTINUED

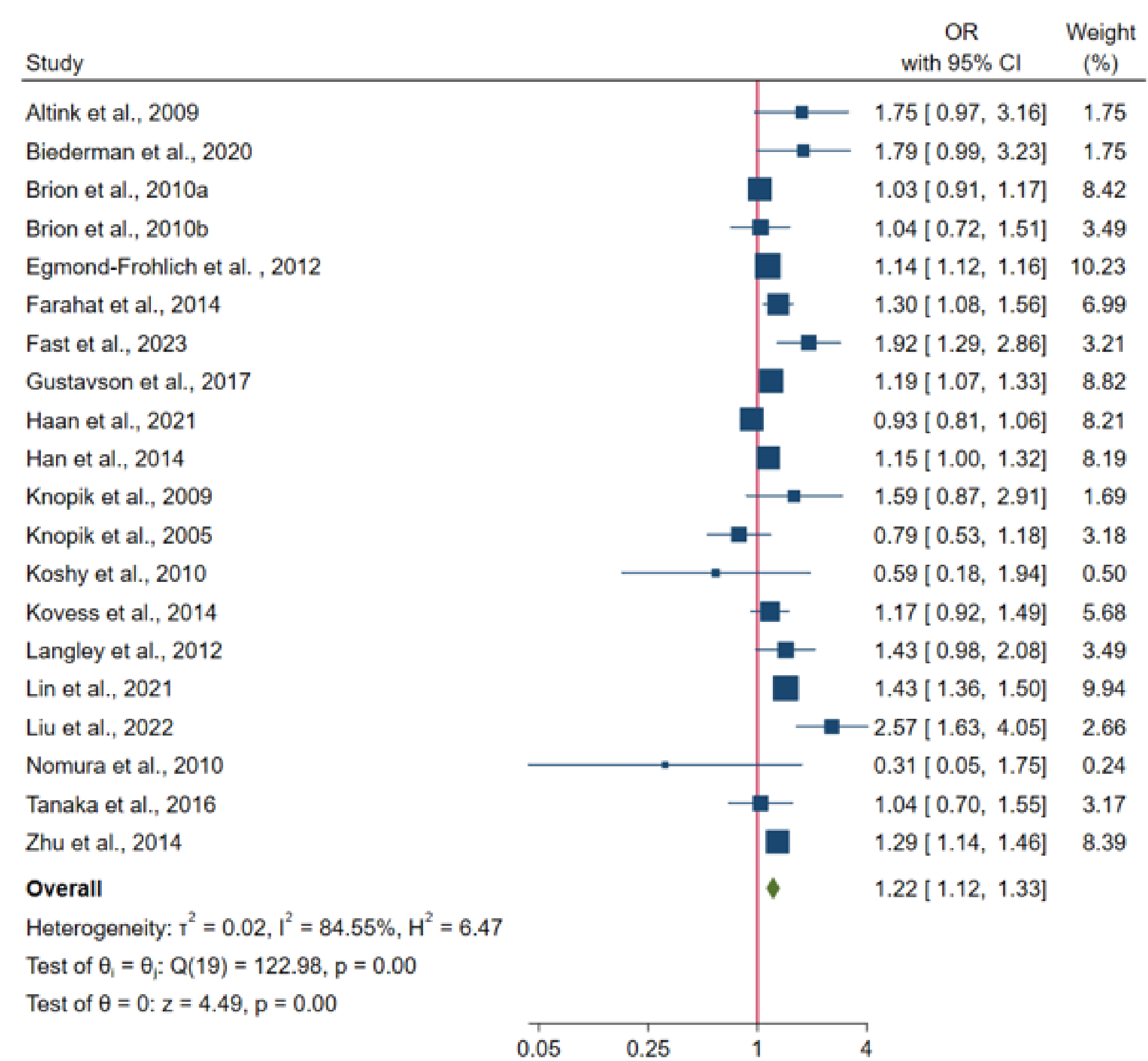


Figure 2. Conventional meta-analysis

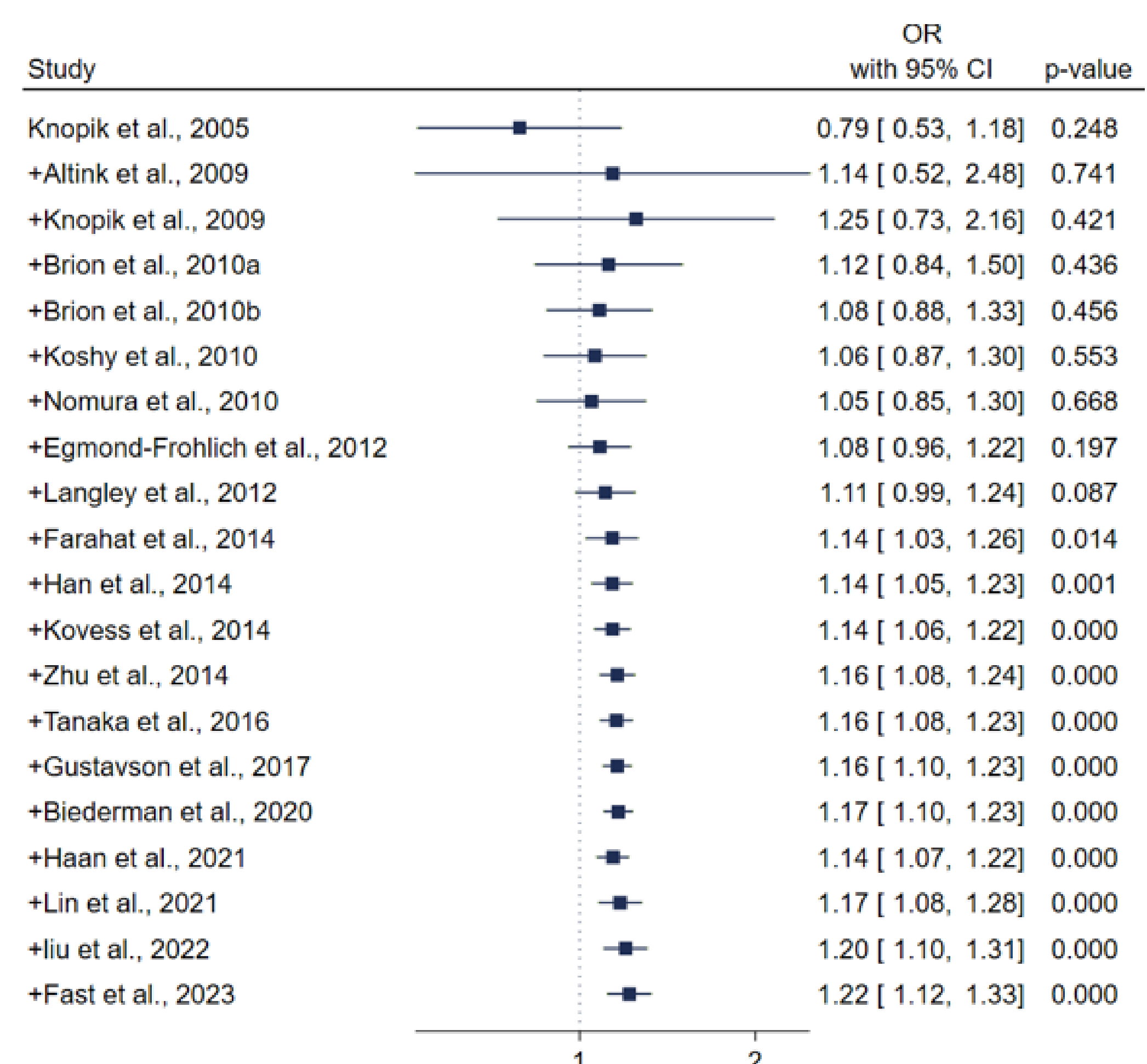


Figure 3. Cumulative meta-analysis

CONCLUSIONS

- Paternal smoking may increase the risk of ADHD in children.
- Maternal smoking may confound the observed association.
- Future studies should focus on maternal and paternal comparisons to disentangle the independent and combined effects of parental smoking on ADHD risk in children.

AUTHOR CONTACT INFORMATION

Berihun Dachew
 School of Population Health
 Curtin University
 Perth | Australia
 Email: berihun.dachew@curtin.edu.au