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# The natural history of idiopathic scoliosis during growth: a meta-analysis



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# Background and Purpose



- The real risk of progression of idiopathic scoliosis is considered to vary during different growing phases, but thus far data concerning this issue have been addressed in only a few studies and narrative reviews
- The aim of this study is to provide a meta-analysis of current literature concerning the natural history of idiopathic scoliosis during growth





# Methods



## Data Sources

A comprehensive search of MEDLINE, EMBASE, and SCOPUS databases was conducted up to November 2016

Eligible works were prospective or retrospective studies that enrolled patients with infantile (IIS), juvenile (JIS), or adolescent idiopathic scoliosis (AIS), followed up without any treatment from the time of detection

In controlled studies (treatment versus observation) only data from the control group managed with observation were evaluated.



# Methods



## Data extraction and quality assessment

Data were extracted independently by two reviewers

Outcome measures:

- Progression rate: number of subjects with a predefined significant change in Cobb angle in the main curve or progression over a predefined threshold
- Rapidity of progression: average Cobb angle progression per year
- Cobb angle variation: change between baseline and the end of follow up

To verify the methodological quality of the studies, we used the CASP Cohort Study Checklist according to the NICE guidelines





# Methods



## Data analysis and synthesis

A meta-analysis for proportion was performed

The studies were grouped per diagnosis: IIS, JIS, and AIS

Due to the expected large heterogeneity, we applied a random effect model to pool the data

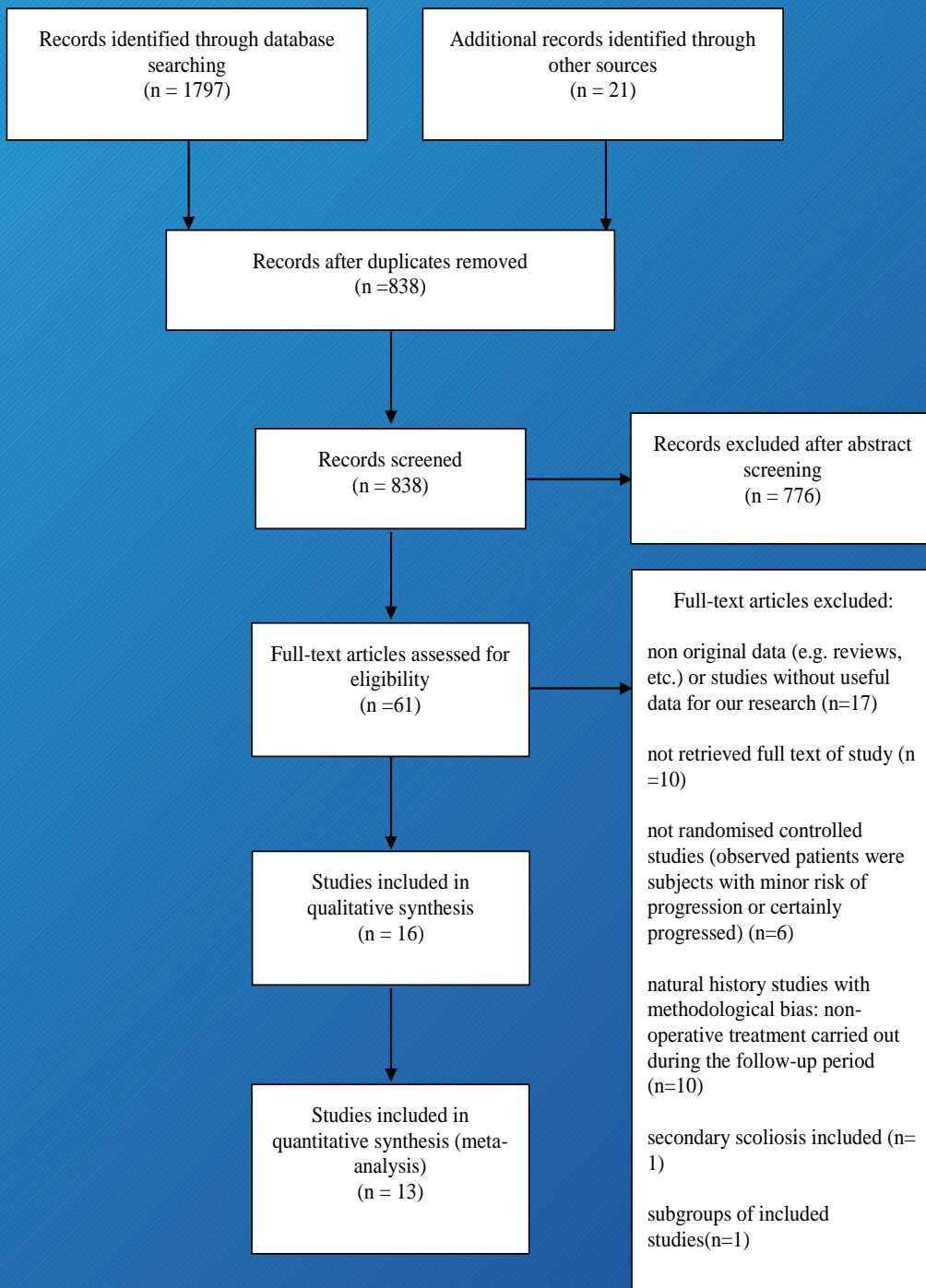


# Results

Of the 1797 citations screened, we assessed 61 full-text articles and included 13 of these (2301 participants)

- three studies included IIS patients (347 participants)
- five studies included a mixed population of JIS and AIS (1330 participants)
- five studies included AIS patients only (624 participants)

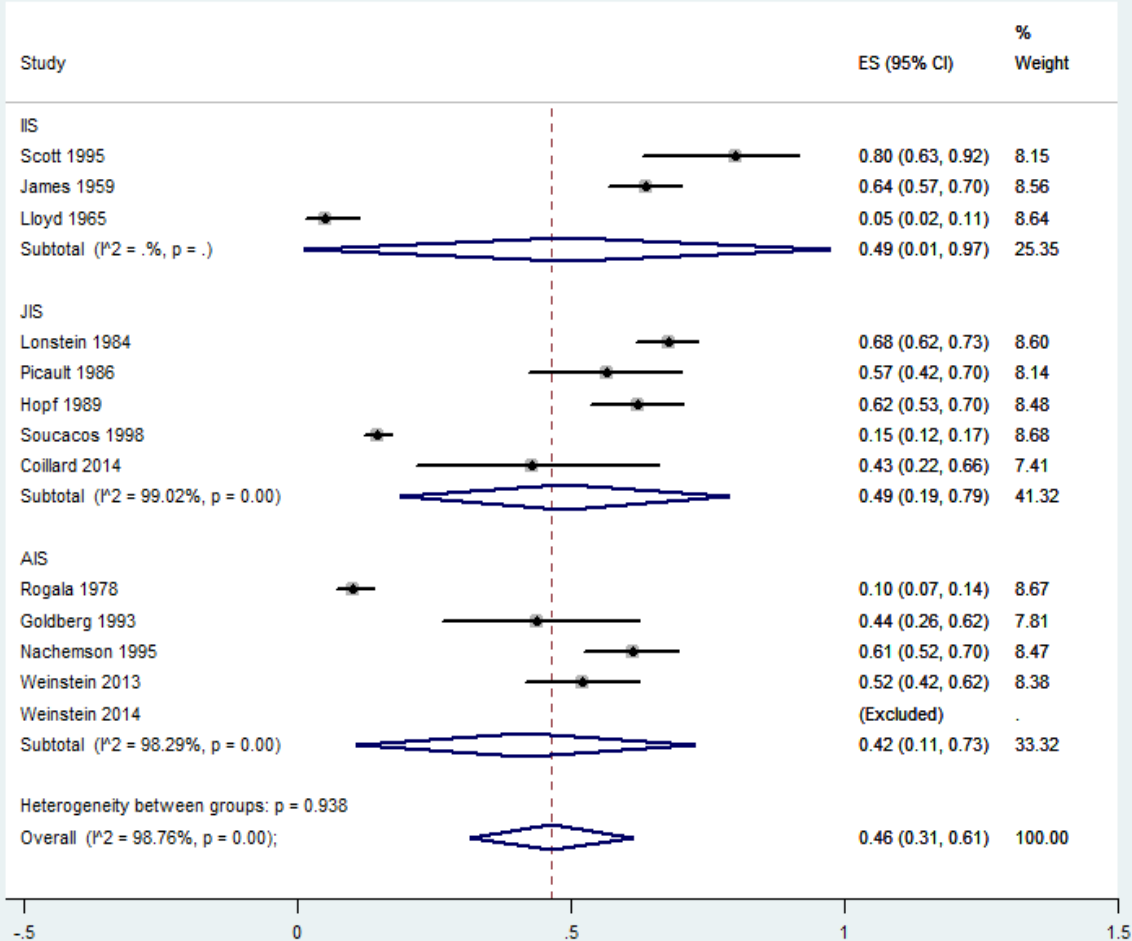
The quality assessment resulted in 11 articles achieving a sufficient level of quality, with a score higher than 6 out of a maximum of 11, in line with the CASP Cohort Study Checklist







# Results



The random pooled estimated progression rate was

- 49% (95% CI: 1–97%) for IIS
- 49% in a mixed group of patients affected by JIS or AIS (95% CI: 19–79%)
- 42% in AIS (95% CI: 11–73%)

Concerning the rapidity of progression and the Cobb angle change outcome, it was only possible to perform a qualitative analysis due to incomplete reporting

# Limitations



Different studies applied different criteria to define progression and some included mixed population





# Conclusions



What is clear from almost all of the studies is the risk of progression of the Cobb angle during growth, even if the rate of scoliosis progression is extremely variable among studies



# Disclosure



None of the authors has any potential conflict of interest

