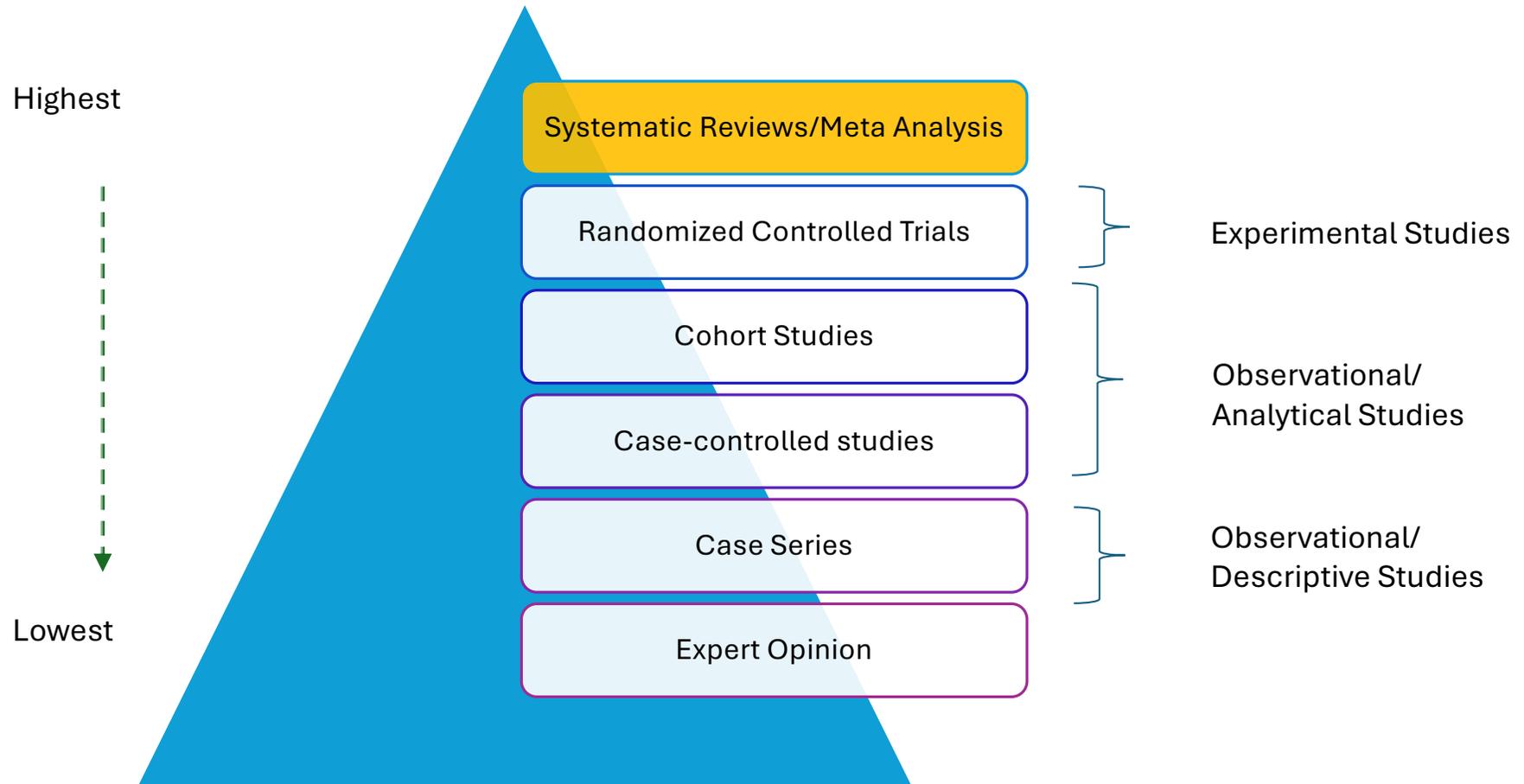# Systematic Review Meta Analysis

Assoc. Prof. Dr. Doğukan ÖZEN

# Evidence-Based Medicine



➢Evidence-based medical practice aims to consolidate best research evidence with clinical and patient expertise.

➢Evidence-based medicine practices are gaining importance rapidly today, for reasons such as reaching the truth in the most reliable way and encouraging scientific and critical thinking.

➢Systematic reviews and meta-analyses are essential tools for synthesizing evidence needed to inform clinical decision making and policy

➢In clinical research, systematic reviews and meta-analyses are a critical part of evidence-based medicine.

# Evidence Pyramid



Highest

Systematic Reviews/Meta Analysis

Randomized Controlled Trials — Experimental Studies

Cohort Studies

Case-controlled studies — Observational/ Analytical Studies

Case Series — Observational/ Descriptive Studies

Lowest

Expert Opinion

# Narrative Review vs Systematic review vs Meta Analysis
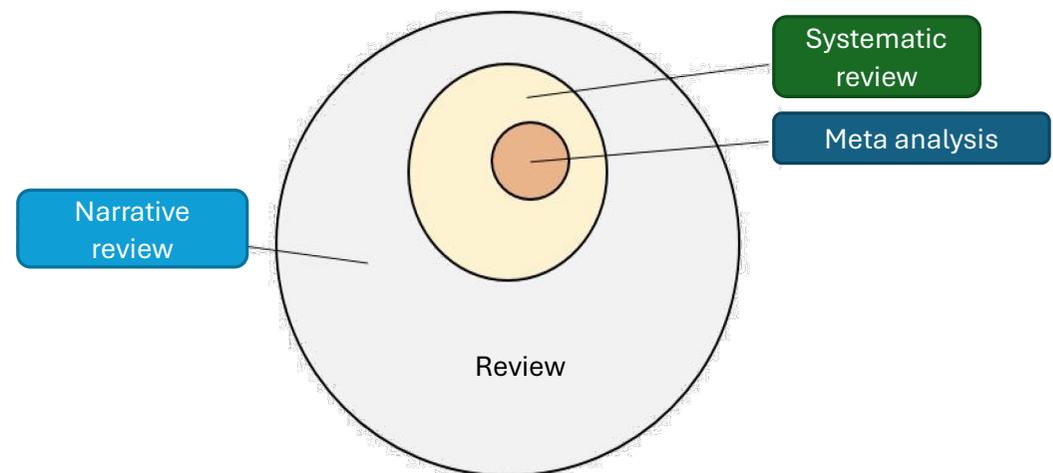
## What is narrative/traditional review

- These are studies that synthesize findings, results and evaluations by examining two or more studies published on a particular subject. These are articles in which information obtained from different sources and in different ways is compiled <u>without</u> following a specific method, generally by people who are experts in that field.

## What is Systematic Review?

- Seek to collate evidence that fits pre-specified eligibility criteria in order to answer a specific research question. They aim to minimize bias by using explicit, systematic methods documented in advance with a protocol

## What is meta analysis?

- A statistical technique for combining the results of multiple studies in a systematic review in a mathematically appropriate way, to create a single (pooled) and more precise estimate of treatment effect

Systematic review

Meta analysis

Narrative review

Review

# Narrative reviews vs Systematic reviews

| | Systematic reviews | Narrative reviews |
|---|---|---|
| Hypothesis | Clearly-defined or well-formulated clinical or basic research topic or question. | Broad overview of a topic-related research area. |
| Search method | Predefined protocol-based | Not predefined protocol-based: involving subjective selection bias |
| Inclusion of studies for review | Predefined selection criteria as per the authors' hypothesis | Authors' intuition and research experience |
| Search media | Diverse search engines | Mainly PubMed or Medline data base |
| Data extraction | Protocol-based: Continuous or categorical statistical values | Not protocol-based: Simple description of study findings |
| Data synthesis | Based on data extraction and synthesis guidelines such as PRISMA | Overall description of each study, mainly focusing in studies that authors selected |
| Data quality | Grading by guidelines available in multiple resources | Partially objective grading by anecdotal resources |
| Interpretation | Based on data included | Easily biased by authors' subjective intention |