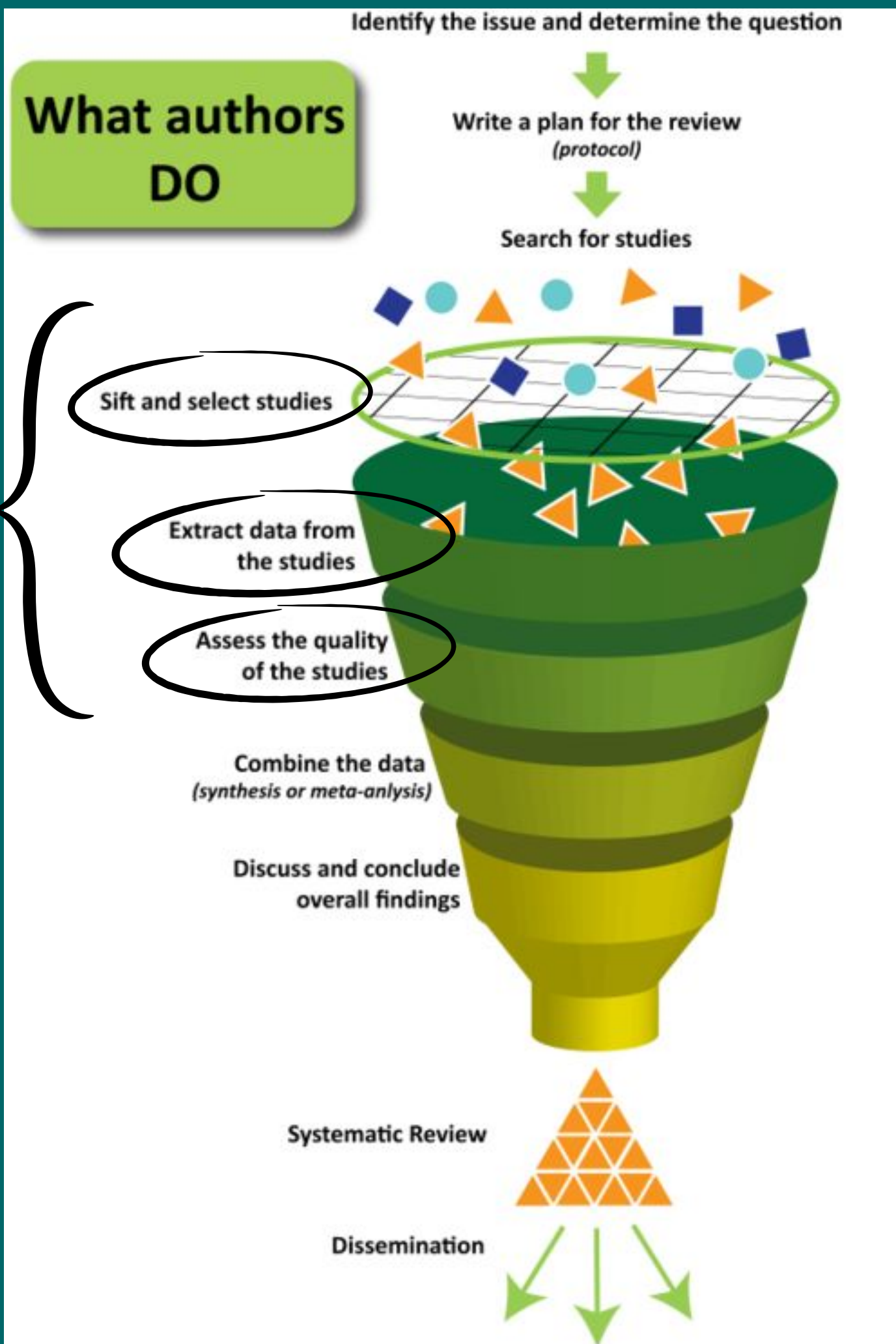


MASTERING THE SYSTEMATIC REVIEW DAY - 5

DAY-4

DATA
GATHERING



WHERE WE
ARE RIGHT
NOW IN OUR
RESEARCH
JOURNEY?

What authors DO

Identify the issue and determine the question

Write a plan for the review
(protocol)

Search for studies

Sift and select studies

Extract data from
the studies

Assess the quality
of the studies

Combine the data
(synthesis or meta-analysis)

Discuss and conclude
overall findings

Systematic Review

Dissemination

WHAT WILL BE OUR TODAY'S AIM?

DAY-5

DATA
SYNTHESIS

**"MAKING SENSE OF THE
EVIDENCE"**

**DATA SYNTHESIS
&
INTERPRETATION**

DATA SYNTHESIS & INTERPRETATION

1) DATA SYNTHESIS?

Definition, Importance, Types

2) NARRATIVE VS META-ANALYSIS

Steps in Narrative Synthesis

3) CREATING SUMMARY TABLES

4) COMPARE & INTERPRET FINDINGS

5) COMMON MISTAKES TO AVOID

6) FREE AI TOOLS TO SUPPORT SYNTHESIS

DAY-4

WE FOUND THE RIGHT PIECES (ARTICLES, DATA)

CONNECTING WITH

DAY-5

**WE START PUTTING THOSE PIECES TOGETHER TO SEE THE FULL
PICTURE (THE OVERALL FINDINGS AND CONCLUSIONS).**

WHAT IS DATA SYNTHESIS?

“**DATA SYNTHESIS**” MEANS PULLING EVERYTHING TOGETHER TO UNDERSTAND THE OVERALL MESSAGE FROM YOUR STUDIES.

EXAMPLE: -

“LET’S SAY YOU HAVE READ 5 STUDIES ABOUT HOW EXERCISE AFFECTS CHOLESTEROL. **YOU’RE NOT JUST LISTING RESULTS—YOU’RE MAKING SENSE OF THEM.**”

WHY DATA SYNTHESIS IS IMPORTANT?

- WE DO SYNTHESIS TO GIVE A CLEAR ANSWER TO OUR RESEARCH QUESTION USING RESULTS FROM MANY STUDIES.
- THIS HELPS US MAKE STRONG, EVIDENCE-BASED CONCLUSIONS.

WITHOUT SYNTHESIS

- WE HAVE LOTS OF DATA, BUT NO DIRECTION.
- WE DON'T KNOW WHAT THE OVERALL MESSAGE IS.

TYPES OF DATA SYNTHESIS



NARRATIVE SYNTHESIS

JUST EXPLAINING
WHAT STUDIES
FOUND IN WORDS
(NO STATISTICS)

META- ANALYSIS

USING STATISTICS
TO COMBINE
RESULTS (WE SKIP
THIS FOR NOW —
IT'S ADVANCED).

INFO ABOUT NARRATIVE SYNTHESIS

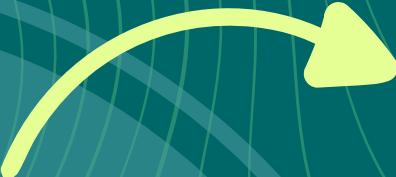
NARRATIVE SYNTHESIS

"TELLING THE STORY OF WHAT THE RESEARCH SAYS."

YOU DO THIS BY DESCRIBING, COMPARING, AND
SUMMARIZING THE FINDINGS OF DIFFERENT STUDIES
USING WORDS, TABLES, AND THEMES—NOT
NUMBERS OR STATISTICS.

WHY FOCUS ON NARRATIVE SYNTHESIS?

NARRATIVE SYNTHESIS

- 
- ✓ EASY TO UNDERSTAND AND APPLY
 - ✓ WORKS FOR ALL TYPES OF STUDIES
 - ✓ BEST FOR EARLY PROJECTS

YOU DON'T NEED TO CALCULATE ANYTHING —
JUST OBSERVE, UNDERSTAND, AND EXPLAIN.



**USING ONLY NARRATIVE
REVIEWS AND NOT META-
ANALYSIS- WON'T WE WILL
BE MISSING OUT ON DATA
WHILE SYNTHESIS ?**

ANSWER - NOT AT ALL - HERE'S WHY:

STILL USES ALL THE DATA — JUST IN WORDS, NOT STATISTICS.

NARRATIVE SYNTHESIS

ASPECT	NARRATIVE SYNTHESIS	META-ANALYSIS
Uses study findings?	✓ Yes	✓ Yes
Combines data across studies?	✓ Yes, Using descriptions & summaries	✓ Yes, using numbers/stats
Needs stats software?	✗ No	✓ Yes
Beginner-friendly?	✓ Yes	✗ No
Good for all study types?	✓ Yes (qualitative + Quantitative)	✗ Only for similar quantitative.



**BUT WHAT IF WE HAD
INCLUDED META-ANALYSIS
AS ONE OF RELEVANT STUDY
FOR ANSWERING OUR
RESEARCH QUESTION?**

WHAT PARTICIPANTS SHOULD DO IF THEY INCLUDED A META-ANALYSIS?

1) USE THE META-ANALYSIS AS A HIGH-LEVEL SUMMARY OF PAST EVIDENCE

- A meta-analysis is already a synthesis of multiple studies.
- So, it shows what has already been found on a topic.



Example:

- If you are researching “How exercise affects cholesterol in smokers,” and they found a 2022 meta-analysis on this topic, they can:
- “Use it to understand the overall trends.”
- “Mention it in the Background/Introduction or Discussion section of their review.”
- “Use its included studies as references – check if some of those studies match their inclusion criteria.”

WHAT PARTICIPANTS SHOULD DO IF THEY INCLUDED A META-ANALYSIS?

2) DO NOT TREAT A META-ANALYSIS AS A PRIMARY STUDY

- They should not extract data directly from a meta-analysis as if it were a new trial.
- Instead, they should look at the individual studies included within the meta-analysis.

✓ Best use:

“This recent meta-analysis included 15 RCTs and found that moderate exercise reduced LDL cholesterol in smokers by an average of 10 mg/dL. However, the current review focuses only on studies from the last 5 years.”

WHAT PARTICIPANTS SHOULD DO IF THEY INCLUDED A META-ANALYSIS?

3) CHECK FOR RELEVANCE, DATE, AND SCOPE

- Is the meta-analysis too old? (e.g., >5 years?)
- Does it answer exactly the same question as theirs?
- Does it include studies that are too different (different population, intervention)?

If yes, then they must explain how their review adds something new.

SO WHAT TO DO IF I HAVE META-ANALYSIS AS RELEVANT STUDIES?

- >If you find a meta-analysis, don't worry – it's not a problem. Use it as a strong background source. But make sure you base your review on original studies, not summaries of other reviews.
- >Meta-analyses show what's already known – you're trying to show what's still missing or what's more recent.



LET'S CONNECT

DATA EXTRACTION <--> DATA SYNTHESIS

OUR GOAL NOW

SCAN & CONNECT PIECES OF
INFORMATION TOGETHER- TO
DRAW FINAL DATA.

IMAGINE FOR RESEARCH QUESTION

**“HOW DO DIET AND EXERCISE INFLUENCE CHOLESTEROL LEVELS
IN INDIVIDUALS WHO QUIT SMOKING?”**

Sample Article Example (Fake but realistic)

Title: Effect of Mediterranean Diet on LDL Levels in Recent Ex-Smokers

Population: 100 people who quit smoking in the last 6 months

Intervention: Mediterranean diet

Outcome: LDL cholesterol levels after 3 months

Result: LDL dropped by 12% ($p < 0.05$)

ANALYZING THE PAPER'S PART OF SCREENING

SCAN FOR FOLLOWING KEY INFO-

Section

What to Look For?

Title + Abstract

Does it match your topic (smoking + diet/exercise + cholesterol)?

Introduction

Why the study was done – does it align with your review?

Methods

Who were the participants? What was done (diet/exercise)?

Results

What was the outcome? Numbers? Any statistical result?

Discussion

What do the authors say about their findings?

CREATING SUMMARY TABLES (WITH EXAMPLES)



“TABLES HELP YOU STAY ORGANIZED AND AVOID CONFUSION.”

STUDY (AUTHOR, YEAR)	POPULATION	INTERVENTION	OUTCOME MEASURED	RESULT	CONCLUSION
Smith et al., 2021	100 ex-smokers	Mediterranean diet	LDL cholesterol	+ 12% ($p < 0.05$)	3 months follow-up; clear drop

TIP: KEEP THIS TABLE FOR ALL YOUR ARTICLES — ONE ROW PER ARTICLE.

ASK THESE SIMPLE QUESTIONS

- Does this paper match my population?
- ☒ Yes – people who quit smoking
- Is the intervention what I'm studying?
- ☒ Yes – diet
- Is the outcome relevant?
- ☒ Yes – cholesterol (LDL)
- What result did they find?
- ☒ 12% drop in LDL → Useful for answering your research question!

ASK THESE SIMPLE QUESTIONS

Repeat for Each Article

Do the same for:

- Articles on exercise after quitting smoking
- Articles comparing diet vs exercise
- Any article measuring cholesterol in ex-smokers

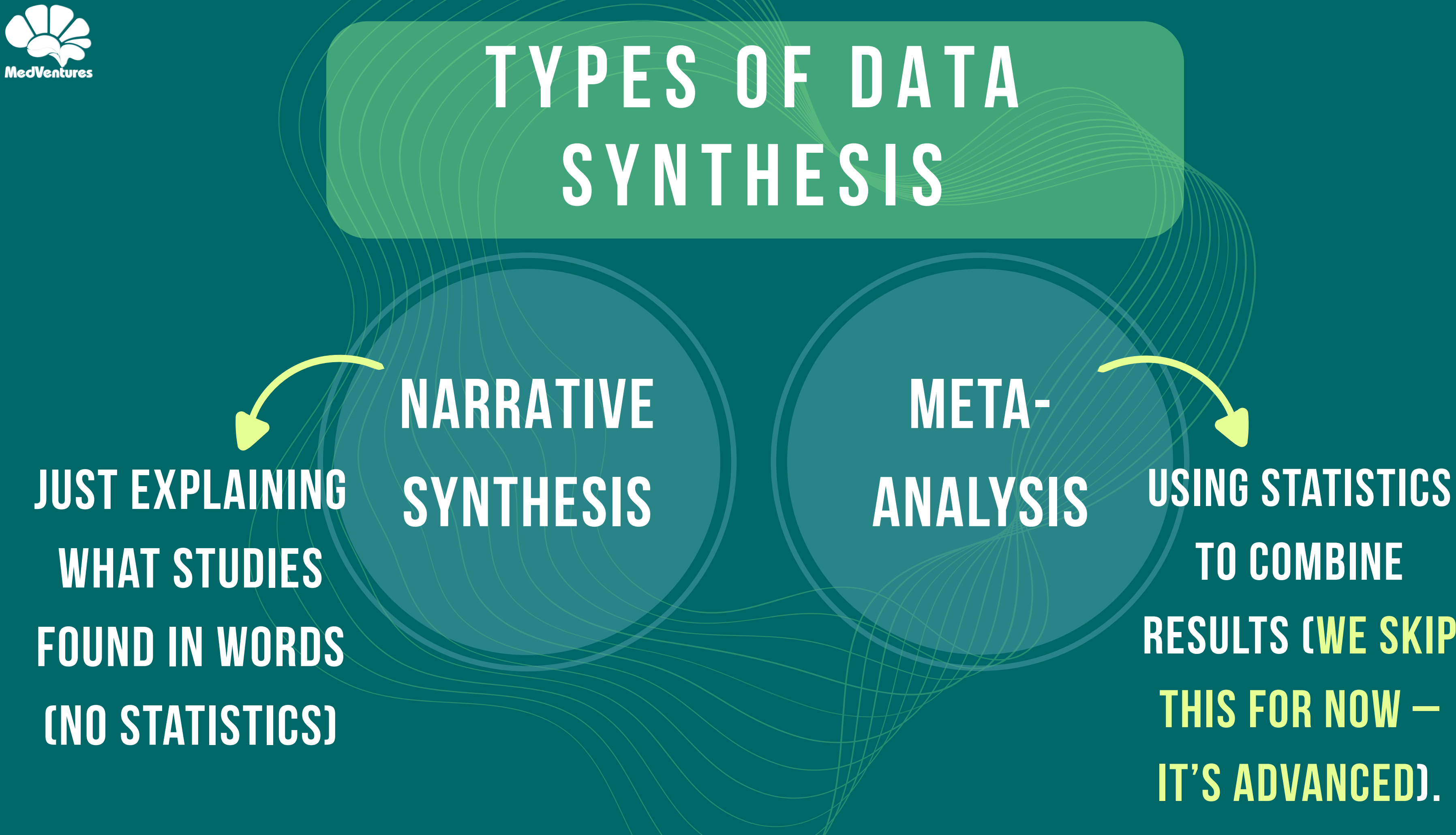
Group Articles by Theme

Once all rows are filled:

- Group all diet-focused studies together
- Group all exercise-focused studies
- Group any combination studies

 This will help you when you do the Narrative Synthesis

TYPES OF DATA SYNTHESIS



NARRATIVE SYNTHESIS

JUST EXPLAINING
WHAT STUDIES
FOUND IN WORDS
(NO STATISTICS)

META- ANALYSIS

USING STATISTICS
TO COMBINE
RESULTS (WE SKIP
THIS FOR NOW —
IT'S ADVANCED).

4 STEPS OF NARRATIVE SYNTHESIS

1

GROUP THE
STUDIES

2

SUMMARIZE
THE
RESULTS

3

COMPARE &
CONTRAST

4

INTERPRET
THE
OVERALL
FINDINGS

4 STEPS OF NARRATIVE SYNTHESIS

✓ 1. Group the Studies

☞ “Put similar studies in small groups so we don’t get confused.”

- How to group?
- Based on:
 - What they studied (e.g., diet, exercise, medication)
 - Who they studied (e.g., smokers, women, elderly)
 - What result they checked (e.g., cholesterol, weight)

4 STEPS OF NARRATIVE SYNTHESIS

✓ 1. Group the Studies

👉 “Put similar studies in small groups so we don’t get confused.”

● Example:

You found 5 studies.

- 3 studied diet
- 2 studied exercise

✓ Group them:

- Group 1: Diet studies
- Group 2: Exercise studies

4 STEPS OF NARRATIVE SYNTHESIS

✓ 2. Summarize the Results

☞ “Write what each study found – in simple words.”

Just 1–2 lines per study:

- Did cholesterol go up or down?
- Was the intervention helpful or not?

Example:

- Study 1 (Diet): LDL reduced by 15 mg/dL
- Study 2 (Diet): Slight reduction, not significant
- Study 3 (Exercise): HDL improved, LDL no change

4 STEPS OF NARRATIVE SYNTHESIS

✓ 3. Compare & Contrast

👉 “Look at the studies side by side – are they saying the same thing?”

Ask:

- Do most studies agree?
- Are there any that say the opposite?

4 STEPS OF NARRATIVE SYNTHESIS

✓ 4. Interpret the Overall Findings

☞ “Tell the story of what all studies together are saying.”

- What does it all mean?
- Are we confident? Or is the evidence still unclear?
- Does it answer our research question?

4 STEPS OF NARRATIVE SYNTHESIS

✓ 4. Interpret the Overall Findings

👉 “Tell the story of what all studies together are saying.”

● Example:

“Most studies show that diet helps reduce cholesterol in smokers. However, results vary, and more studies are needed in women over 50.”

CREATING SUMMARY TABLES (WITH EXAMPLES)



“TABLES HELP YOU STAY ORGANIZED AND AVOID CONFUSION.”

STUDY	POPULATION	INTERVENTION	OUTCOME	RESULT	CONCLUSION
OUTCOME	SMOKERS	EXERCISE	LDL	10%	EFFECTIVE
RESULT FORMAT	SMOKERS	DIET	HDL	5%	MODERATE

FILL SUCH A TABLE FOR STUDIES- HELPS TO STRUCTURE YOUR
SUMMARY TABLES

COMPARE & INTERPRET FINDINGS

Ask:

- “Did most studies agree or disagree?”
- “Did they measure the same outcomes?”
- “Was one method more effective than the other?”

 “If 4 out of 5 studies show that exercise reduces cholesterol, you can write: ‘Exercise appears to be effective based on consistent findings in 4 studies.’”

HANDLING CONFLICTING RESULTS

“Sometimes studies don’t agree. That’s okay!”

“It’s very normal that different studies find different results. It doesn’t mean anyone is wrong – it just means there might be differences in how, who, or what they studied.”

3 SIMPLE THINGS- TO CONSIDER

1) Check for Reasons

👉 “Why did the results not match?”

Ask:

- Did you studied different types of people? (e.g., age, gender, location?)
- Did you use different methods or tools?
- Was the study very short or very long?
- Was the sample size too small?

3 SIMPLE THINGS- TO CONSIDER

1) Check for Reasons

● Example:

One study found diet helps. Another didn't.

✓ Look deeper:

- First study had 300 people and lasted 12 weeks.
- Second had only 20 people and lasted 3 weeks.
- → Smaller, shorter study may not show results.

3 SIMPLE THINGS- TO CONSIDER

2) Be Honest About the Conflict

👉 “Mention it clearly in your writing.”

Never skip or hide a study just because it doesn't match others.

● Example sentence:

“One study found no significant improvement. This might be due to a small sample size and short duration, unlike the others.”

✅ This makes your review honest, transparent, and stronger.

3 SIMPLE THINGS- TO CONSIDER

3) Don't Panic – It's Normal

“Conflicting results are part of real science.”

Hunderstand:

- Your job is to analyze, not to force a conclusion.

● Example Conclusion:

“While most studies support the role of exercise in lowering cholesterol, two studies found no effect. This variation highlights the need for larger, longer-term studies in different populations.”

COMMON MISTAKES TO AVOID

- Just copying and pasting study results.
- Not comparing studies with each other.
- Ignoring quality (treating weak and strong studies the same).
- Leaving out important study details like sample size or duration.

FREE AI TOOLS TO SUPPORT SYNTHESIS



[Elicit.org](https://elicit.org)

Use- Summarize findings

Upload papers & ask: "What did each study find?"



[MetaInsight](https://www.metainsight.ai)

Use- Calculate & Extract numerical data



Thank you for having you guys!!!

**SEE YOU AT
WORKSHOP!!!**