

Use of Artificial Intelligence (AI) in Academic Research

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Scientific output is growing faster than ever.

More papers. More data. More complexity.

But our time is not growing.



**More research to do.
Less time to do it.**

LIMITED TIME

INCREASING WORKLOAD

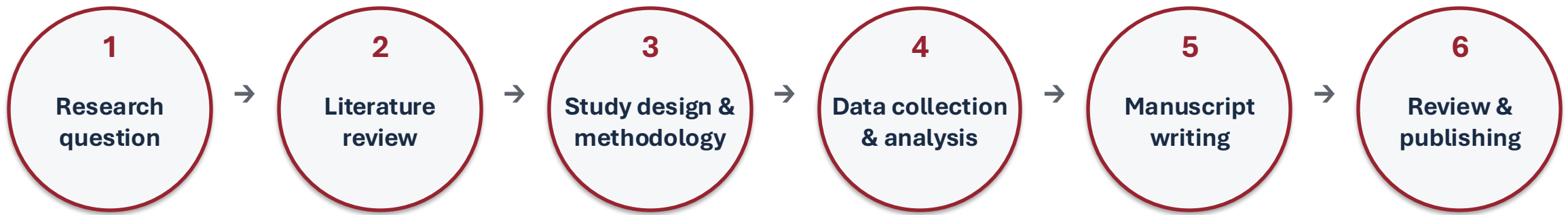
Can AI help in this gap?



What do you expect AI to do in academic research ?



Where Can AI Join the Research Journey?



Where can AI help — and where must the researcher remain in control?



Formulating the Research Question

AI CAN HELP

- Transform an idea or clinical observation into a structured PICO question
- Generate a hypothesis
- Suggest potential primary and secondary outcomes
- Suggest inclusion and exclusion criteria

But the researcher applies FINER

Feasible

Interesting

Novel

Ethical

Relevant



Literature Review

With a well-structured prompt, AI can help build a search strategy:

- MeSH terms and keywords
- Synonyms and alternative terminology
- Boolean operators — AND, OR, NOT
- Inclusion and exclusion criteria

BUT

**Search the original literature
in trusted databases.**

**Never rely on an AI-generated citation
without verification.**



Study Methodology

You design the protocol. AI can act as a critical reviewer.

- Review study outcomes
- Suggest alternative study designs
- Identify potential confounders and sources of bias
- Review the proposed statistical analysis
- Check the methodology for internal consistency

AI should support — not replace — methodological and statistical expertise.



Data Collection & Analysis

AI CAN ASSIST

- Create data-collection templates
- Support data organization
- Generate statistical code (e.g., R/Python)
- Explain complex statistical concepts

RESEARCHER MUST

- Protect patient confidentiality
- Validate AI-generated code and outputs
- Choose the final statistical tests
- Define missing-data and subgroup analysis

Never upload identifiable patient data to a public AI tool.



Manuscript Writing & Review

The researcher remains responsible for the scientific content.

- Improve clarity, structure and flow
- Improve language, grammar and academic tone
- Reduce wordiness and repetition
- Review consistency

AI = EDITING ASSISTANT

Not the scientific author

**Accuracy • Originality • Integrity
remain Author responsibilities.**



Referencing

Never use an AI-generated citation without verification.

- 1 Open the original paper
- 2 Verify that the paper exists
- 3 Check that it supports the evidence
- 4 Verify the data (population, intervention, outcomes, ...)
- 5 Cite the original source — not the AI

AI can suggest a reference. Only you can verify the evidence.



Publishing

- AI tools cannot be listed as authors: they cannot assume responsibility
- Human authors remain responsible for accuracy, integrity and originality
- Disclose generative-AI use as required by the journal
- Describe which tool was used and for what purpose

AI can assist the author — but it cannot be the author.



What Should NEVER Be Delegated to AI?

- 1 Ethical approval and informed-consent decisions
- 2 Final selection of primary outcome
- 3 Generation of data, images or references
- 4 Final interpretation of statistical results
- 5 Authorship and scientific accountability

AI can assist the process. Human researchers retain judgment and accountability.



A Better Prompt Produces a Better Assistant

Give AI the same context you would give a junior researcher.

ROLE

Who should AI as ?

CONTEXT

What does AI Should know?

TASK

What exactly do you want? '

CONSTRAINTS

What Should AI avoid ?

OUTPUT

How do you want the answer?



Example: From Clinical Observation to Research Question

Prompt

“I observed GERD after sleeve gastrectomy. Help me formulate a research question using PICO, possible primary and secondary outcomes, and potential confounders.”

AI can structure the idea.

You decide whether it is FINER.

Feasible • Interesting • Novel • Ethical • Relevant



TAKE-HOME MESSAGE

AI will not replace clinical researchers.

**But researchers who know how to use AI
will outperform those who don't.**

Use AI as a co-pilot — not an autopilot





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