

INSIGHTS

Using Generative AI for Research: From Research Assistant to Responsible Companion in Healthcare Research

CHEAB Sambath¹, MD, MHPE, PhD student (STS)

¹ **CHEAB Sambath** is a learning and teaching manager and assistant professor at the University of Puthisastra, a part-time educator at the University of Health Sciences, and a research fellow at the AI Forum.

Abstract

Generative artificial intelligence (GenAI) is increasingly being employed across the research process, from concept generation to article production. For medical students, clinicians, and educators, particularly in low- and middle-income countries like Cambodia, GenAI provides chances to improve efficiency, clarity, and methodological rigor while simultaneously posing hazards to research integrity, privacy, and responsibility. This insight offers practical, task-oriented recommendations for using GenAI responsibly in healthcare research, such as clinical studies, health professions education research, and policy-oriented research. Using a Model-Mode-Task-Verification paradigm, the insight describes safe workflows for literature review, study design support, qualitative and quantitative analytical aid, and academic writing. The emphasis is on human oversight, openness, and ethical accountability. GenAI is positioned as a disciplined assistant who complements, rather than replaces, human judgment, contextual understanding, and methodological ability.

Introduction: Why Research Use Requires Special Discipline

Research varies fundamentally from learning activities and clinical treatment in that it generates knowledge that others will trust, quote, cite, and utilize to inform education, policy, and practice. The implications of research errors, opacity, or distortion extend beyond the domain of the principal investigator. In healthcare, these repercussions may have an impact on clinical decision-making, patient safety, and public trust in the profession.

Many healthcare professionals in Cambodia perform research in addition to their busy clinical and teaching responsibilities. Formal support for technique, statistics, and academic writing is frequently minimal, especially outside of major academic institutions. Within this environment, GenAI technologies may appear appealing as a way to speed up research efforts, improve English-language expression, or clarify unknown techniques. However, international guidelines continually warn that uncritical use of GenAI in research might harm integrity by fabricating references, making unsuitable methodological suggestions, concealing bias, and violating privacy (Andersen et al., 2025; UNESCO, 2023).

This insight consequently takes a realistic approach. It does not address whether GenAI should be employed in research. Instead, it focuses on how GenAI can be utilized safely, transparently, and

professionally, while leaving epistemic authority, ethical accountability, and scholarly judgment firmly in the hands of human researchers.

Core Principle: The Researcher Remains Accountable

One premise remains constant throughout the study lifecycle: GenAI may support research activity, but it cannot be held accountable for research conclusions, interpretations, or claims. GenAI systems lack epistemic judgment, contextual awareness, and moral agency. They produce probabilistic results based on data patterns rather than validated knowledge or personal experience.

Empirical studies indicate that academics increasingly regard GenAI as a 'workhorse' or 'research accelerator,' particularly for writing, summarizing, and data-driven tasks (Andersen et al., 2025; Hanafi et al., 2025). Simultaneously, substantial apprehensions remain over openness, reproducibility, authorship, and integrity (Andersen et al., 2025). This means that healthcare researchers are completely responsible for study design, data analysis, interpretation, and academic claims, regardless of how GenAI is employed during the research process.

Quick Workflow 7.1 – Before You Use GenAI in Research

- Clearly define the research task (for example, question refining, writing support, and analytic reflection).
- Decide explicitly what GenAI may and cannot accomplish.
- Confirm that you have the necessary subject and methodological knowledge to check outputs.
- Confirm that no identifiable patient or participant data will be entered.

Mapping Research Tasks to Models and Modes

The responsible use of GenAI in research begins with a planned task formulation. Rather than asking broad or open-ended questions, researchers should clarify the research aim and choose the appropriate GenAI mode. Common research duties in healthcare include refining research questions, examining unfamiliar literature, assisting with qualitative coding, analyzing statistical results, and improving academic writing clarity and structure.

Exploratory mode (for concept brainstorming and mapping), reflective mode (for logic verification and gap identification), language-support mode (for text editing and restructuring), and comparison

mode (for contrasting frameworks, methodologies, or views) are all appropriate GenAI modes. Authoritarian or autonomous modes, in which GenAI is considered as a decision-maker, are improper and risky in research.

Workflow 1: Using GenAI for Research Question Development

GenAI can help refine research questions but should not generate them. A safe workflow begins with the researcher identifying a genuine clinical, educational, or policy problem based on local practice. GenAI can then be used to clarify queries, offer alternative framings, or find relevant constructs or variables. The researcher must make the final decision on relevance, feasibility, and contextual appropriateness.

For example, a Cambodian clinician-educator researching the self-directed learning (SDL) profile can ask GenAI to examine how similar questions are structured in the international health professions education literature. However, the study issue must eventually be justified in terms of local curriculum structures, assessment culture, data availability, and institutional interests.

Quick Workflow 7.2 – Research Question Refinement

- Draft the initial research question independently.
- Use GenAI to improve wording or explore alternative framings.
- Reject suggestions that are misaligned with local context or feasibility.
- Ensure the final question is defensible without reference to GenAI.

Workflow 2: Literature Exploration (Not Citation Authority)

GenAI is extremely beneficial for helping scholars navigate novel bodies of literature, especially when access to expert mentorship or databases is limited. It may be useful in summarizing prevalent themes, explaining theoretical frameworks, or clarifying methodological disagreements. However, GenAI should never be used as a citation authority.

Multiple studies have found that GenAI systems frequently generate fake, incomplete, or erroneous references that appear reasonable but do not exist (Perkins & Roe, 2025; Samanta & Chakraborty, 2026; Spinellis, 2025). As a result, any reference given by GenAI should be regarded just as a starting point for future research, rather than a source to cite.

Quick Workflow 7.3 – Safe Literature Use

- Use GenAI to understand concepts, not to generate citations.
- Independently locate, read, and assess all cited sources.
- Exclude any reference that cannot be verified.
- Document GenAI use transparently if required by journals or institutions.

Workflow 3: Study Design and Methodological Support

GenAI may help researchers understand and compare methodological options, but it should not be used to design or conduct investigations independently. Appropriate applications include explaining differences between qualitative approaches, comparing sampling strategies, and clarifying analytic stages within established methodologies. In contrast, inappropriate applications include selecting research methods without explicit justification, developing instruments without pilot testing, and estimating sample size or statistical power without formal statistical procedures (Andersen et al., 2025; UNESCO, 2023).

In healthcare research, methodological decisions must be grounded in epistemological alignment, ethical approval requirements, and local feasibility, rather than AI-generated convenience or apparent efficiency. Delegating such decisions to generative systems risks methodological incoherence and undermines research integrity (Andersen et al., 2025; UNESCO, 2023).

Workflow 4: Qualitative and Quantitative Data Assistance

In qualitative research, GenAI can help organize codes, offer topic labels, and compare researcher-generated coding systems. However, humans must continue to interpret and make meaning. AI systems commonly miss cultural subtleties, language, and contextual meaning, particularly in Khmer-language datasets. According to empirical investigations, GenAI can serve as a secondary or reflective help, but not as a primary analyst (Perkins & Roe, 2025).

In quantitative research, GenAI can help explain statistical concepts or evaluate data supplied by statistical tools. It must not gather data, conduct statistical analysis, or make conclusions about significance, causality, or policy consequences.

Safety, Verification, and Ethical Responsibility

The ethical use of generative artificial intelligence (GenAI) in research necessitates thorough verification and transparency methods. Researchers should independently check factual claims, reproduce reasoning without relying on AI outputs, and keep a clear audit trail that shows when and how GenAI technologies were utilized throughout the research process. Journals, funders, and academic institutions are increasingly expecting such approaches as part of their overall pledges to research integrity, reproducibility, and trust (Cleland et al., 2025; Nature Editorial, 2023).

Ethical duties go beyond verification. Researchers must preserve participant privacy by avoiding entering identifiable or re-identified data into GenAI systems, especially those that operate outside of institutional governance frameworks. Clear authorship limits are also necessary. According to international publishing norms, GenAI tools cannot be named as authors because they cannot be held responsible for the correctness, integrity, or accountability of scholarly work. The human authors bear full responsibility for all parts of the research, including errors, misinterpretations, and ethical breaches (ICMJE, 2023; Nature Editorial, 2023; The Lancet Digital Health, 2023).

To operationalize transparency, researchers are encouraged to openly acknowledge GenAI use, particularly when it makes a significant contribution to the research or writing process. Leading publications and scholarly bodies underline that disclosure does not undermine scientific credibility but rather improves trust by making the function of AI tools apparent and reviewable (Cleland et al., 2025; The Lancet Digital Health, 2023).

A practical way to disclose is to describe the scope and purpose of GenAI use, for example:

- Whether GenAI was employed exclusively for language editing and clarity,
- Whether it promoted literature orientation or conceptual understanding,
- or whether it contributed little analytic help with complete human oversight.

This disclosure is consistent with guidance from health professions education scholars and major publishers, all of whom agree on three core principles: GenAI may be used as a tool, but it must not be credited as an author, and its use must be transparently disclosed when it contributes meaningfully to the work (Cleland et al., 2025; ICMJE, 2023; Nature Editorial, 2023; The Lancet Digital Health, 2023).

Conclusion: GenAI as a Research Assistant, not a Researcher

When combined with clear ethical guidelines and methodological discipline, generative AI can greatly assist healthcare research by lowering cognitive load, improving analytical expression, and making scholarly communication clearer. Its usefulness is not in replacing intellectual effort but in facilitating it—assisting scholars in thinking more clearly, writing more precisely, and engaging more critically with unfamiliar methodologies or literature. GenAI, when used without structure or control, has significant hazards, including loss of scientific coherence, concealed bias, impaired openness, and weakened trust in research findings.

The stakes are especially high for academics in Cambodia and other low- and middle-income countries where clinical, teaching, and research roles frequently overlap and formal research financing may be minimal. Responsible use of GenAI necessitates intentional task specification, clear AI role limits, methodical verification of all outputs, and unyielding human accountability at all stages of the research process. GenAI can aid research, but it cannot provide rigor, ethics, or academic judgment. These remain solely human obligations.

Call to Action

Healthcare researchers are encouraged to take a systematic, task-based approach to GenAI deployment. This includes defining research tasks before using AI tools, selecting appropriate modes aligned with those requirements, implementing rigorous verification methods, and transparently documenting GenAI use in accordance with institutional and publication standards. Senior researchers and educators should openly model these practices, including responsible GenAI use in research training and supervision. GenAI can be used as a credible, ethical, and productivity-enhancing assistant while maintaining the integrity, accountability, and trust on which healthcare research is ultimately based.

References

- Andersen, J. P., Degn, L., Fishberg, R., Graversen, E. K., Horbach, S. P. J. M., Kalpazidou Schmidt, E., Schneider, J. W., & Sørensen, M. P. (2025). Generative artificial intelligence in the research process: Researchers' practices and perceptions. *Technology in Society*, 81, 102813.
- Cleland, J., Driessen, E., Masters, K., Lingard, L., & Maggio, L. A. (2025). When and how to disclose AI use in academic publishing: AMEE Guide No. 192. *Medical Teacher*, 47, 1–12.
<https://doi.org/10.1080/0142159X.2025.2607513>
- Hanafi, A., Ahmed, M., Almansi, M., & Al-Sharif, O. (2025). *Generative AI in academia: A comprehensive review of applications and implications for the research process*. International Journal of Engineering and Applied Sciences–October 6 University, 2, 91–110. <https://doi.org/10.21608/ijeasou.2025.349520.1041>
- International Committee of Medical Journal Editors. (2023). *Defining the role of authors and contributors*. <https://www.icmje.org/>
- Nature Editorial. (2023). Tools such as ChatGPT threaten transparent science. *Nature*, 613, 612.
<https://doi.org/10.1038/d41586-023-00191-1>
- Perkins, M., & Roe, J. (2025). Generative AI tools in academic research: Applications and implications for qualitative and quantitative research methodologies. In *Handbook of Artificial Intelligence in Higher Education* (pp. 76-91). Edward Elgar Publishing.
- Samanta, S. K., & Chakraborty, A. (2026). Trust me, I'm wrong: the perils of AI hallucinations, a silent killer. *Journal of Information Technology Teaching Cases*. Advance online publication. <https://doi.org/10.1177/20438869261423221>
- Spinellis, D. (2025). False authorship: an explorative case study around an AI-generated article published under my name. *Research integrity and peer review*, 10(1), 8.
<https://doi.org/10.1186/s41073-025-00165-z>

The Lancet Digital Health (2023). ChatGPT: friend or foe?. *The Lancet. Digital health*, 5(3), e102.
[https://doi.org/10.1016/S2589-7500\(23\)00023-7](https://doi.org/10.1016/S2589-7500(23)00023-7)

UNESCO. (2023). Guidance for generative AI in education and research. UNESCO

Annex

Annex A: One-Page GenAI Research Safety Checklist

GenAI Research Safety Checklist

- I have clearly defined the research task.
- GenAI is used only in an assistive, not authoritative, role.
- No identifiable patient or participant data are included.
- All references and factual claims have been independently verified.
- All analyses and interpretations are my own.
- GenAI use can be transparently disclosed if required.
- Final responsibility for accuracy and ethics remains with me.

Annex B. Widely Used AI-Enabled Tools Supporting Research Workflows

AI-Enabled Tools Mapped to Research Tasks and Appropriate Roles

Research Task	Appropriate AI Role	Illustrative, Widely Used Tools
Research question refinement	Exploratory, reflective	ChatGPT, Claude
Literature orientation & discovery	Exploratory	SciSpace, Perplexity AI, Elicit, Semantic Scholar, Consensus
Citation context & mapping	Exploratory, contextual	Scite.ai, Research Rabbit, Connected Papers, Litmaps
Method understanding & comparison	Explanatory	ChatGPT, Claude
Qualitative data support	Secondary or reflective coder	ChatGPT, spreadsheet tools; <i>(dedicated qualitative software such as NVivo or ATLAS.ti used without AI as primary analysts)</i>

Quantitative result interpretation	Explanation only (post-analysis)	ChatGPT; statistical software outputs (e.g., R, SPSS)
Academic writing & reporting	Language and structure support	ChatGPT, Claude, Grammarly, SciSpace

** Edited with ChatGPT for clarity; all views expressed are solely those of the author.*

** The opinions expressed are the authors' own and do not reflect the views of AI Forum.*