

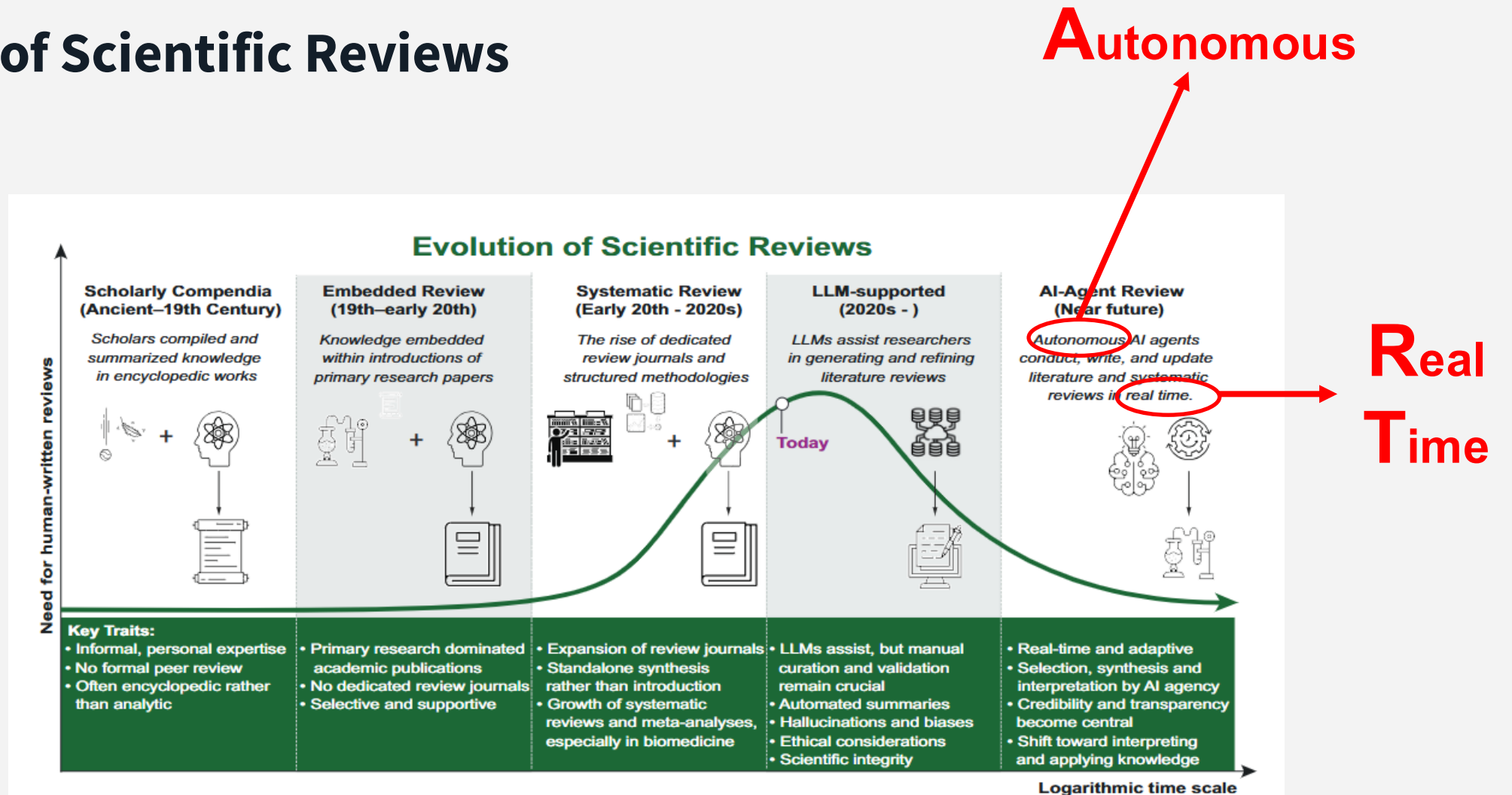
# A Discussion of Agentic Tools for Literature Identification

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# Evolution of Scientific Reviews



**Figure 2. The evolution of scientific reviews.**

The progression of literature review methodologies and the demand for human-written reviews over time, from scholarly compendia to AI-driven review generation, following historical developments, key traits, and future perspectives. Each wave of innovation arrives faster than the last, reflecting a near-logarithmic compression of time.

# What do we mean by “agentic”

- Agentic AI applications = “systems designed to take autonomous action toward a goal rather than just respond to prompts”.
- They can plan, make decisions, use tools, and adapt their behaviour based on feedback.
- They operate *more like collaborators than passive assistants*.
- In practice, they handle multi-step tasks end-to-end *with minimal human intervention*.
- ***E.g. You specify a search query and they execute specific study identification, synthesis and report tasks.***
- *Discussion today to include consensus-like retrieval tools (Consensus, Elicit), platform-specific agents (Undermind), and contextual role of Scite and related citation-centric services in evidence discovery and synthesis.*

## Overview of the landscape and core claims about AI-assisted literature search engines

Retrieval-augmented and AI-assisted search engines, including **Consensus**, **Elicit**, and **Scite**, have started to be evaluated as specialized tools for literature retrieval and synthesis, and are often described as enabling retrieval-augmented generation (RAG) with source-citation grounding.

However, most systems do not autonomously produce fully reliable literature reviews and require human oversight to avoid bias and errors. These themes are discussed in Nature-style coverage and direct evaluations of AI-assisted search tools (Pearson, 2024; , and in comprehensive reviews of **Scite**, **Consensus**, and **Elicit** architectures and capabilities Jin et al., 2024), (Edelman & Skolnick, 2025).

In particular, **Consensus** and **Elicit** are characterized as search engines that ground results in citations and database sources, whereas **Scite** provides context for citations, including whether a citing paper supports or refutes a claim (Pearson, 2024; , Jin et al., 2024), Nicholson et al., 2021.

Literature highlights that many tools search open-access content or abstracts rather than full text, which can limit the completeness of automated synthesis (Pearson, 2024; , (Edelman & Skolnick, 2025). This limitation is echoed in reviews of Valsci and other groundings that emphasize provenance and citation quality as key to reliable literature verification (Edelman & Skolnick, 2025).

# Why are we interested?

- Recently released AI toolset based on autonomous agents named PaperQA2, demonstrates potential of using full-text scientific papers to generate accurate, comprehensive summaries by accessing both open-access and paywalled content (Skarlinski et al, 2024; Pearson,2024).
- Digest entire articles rather than just abstracts - systems can identify and synthesize key information with “fewer reasoning errors than traditional human-written summaries”.
- Beyond PaperQA2,...other tools, such as Scholarcy, **Undermind**, Amass, **Elicit**, **Consensus** or SciSummary,...have been adapted to meet needs of the scientific community:
  - summarizing the literature,
  - identifying argumentative gaps and valuable insights buried in otherwise unread articles,
  - suggesting relevant studies,
  - synthesizing contrasting scientific opinions and even
  - conducting meta-analytic calculations (Purewal et al, 2025).

# Where can we find them?:

- **Undermind Website:**

<https://undermind.ai>

- **Consensus Website:**

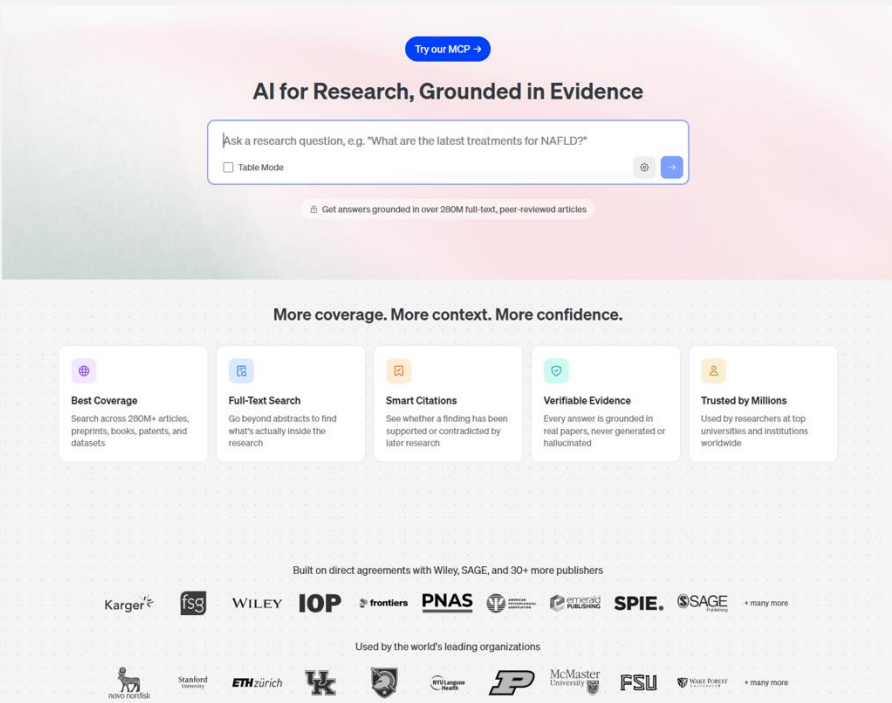
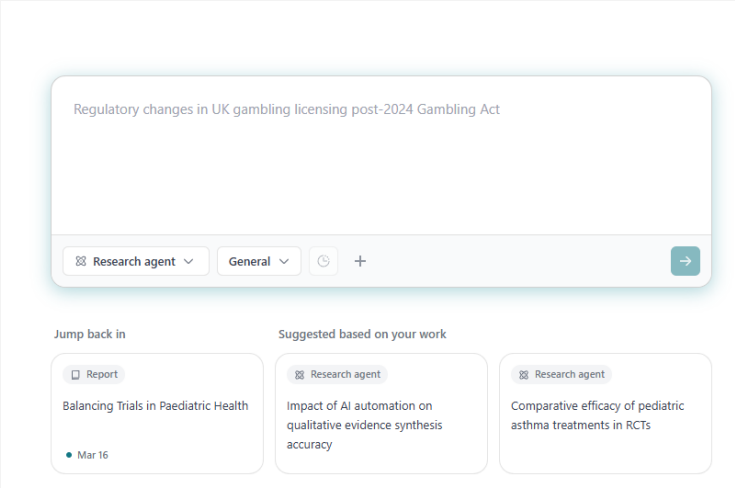
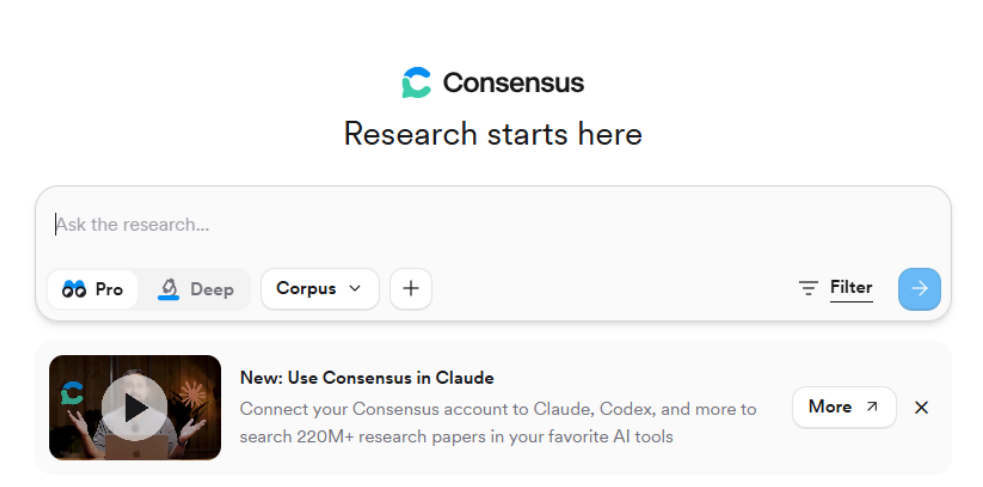
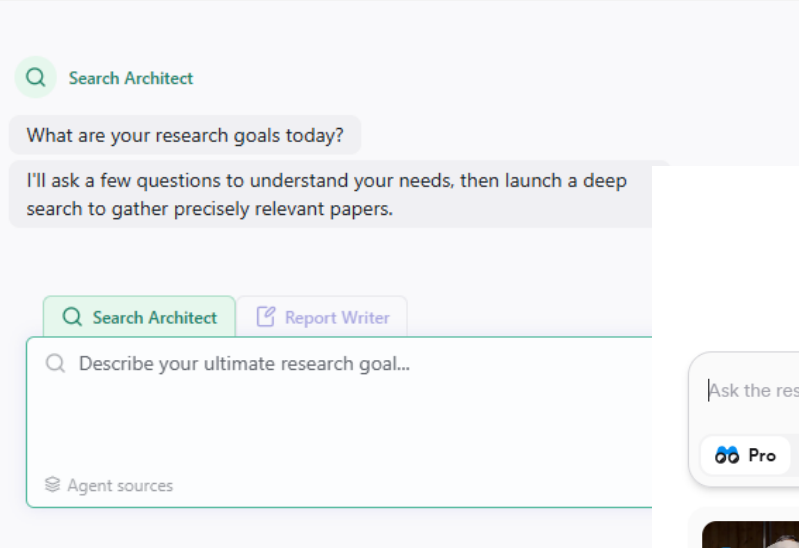
<https://consensus.app>

- **Elicit Website:**

<https://elicit.com>

- **Scite Website:**

<https://scite.ai>



# When might we use them?

## **For Sensitisation:**

- Preparation for Discussion with Commissioners (AB)

## **During Protocol Development:**

- Exploratory Searches (finding test/training sets for search [or for designing data extraction/quality assessment (AB)]; finding relevant keywords) (FS)
- Scoping Searches (Giving rough numbers to team for workload estimate for funding application or planning) (FS)
- For Methodology (AB)

## **At Last Stage of Protocol Developments/After Registration**

- Systematic Searches (FS)
- Supplementary Searches (FS, AB)
- Finding Evidence to Support/Refute Programme Theories in Realist Synthesis (AB)
- At Final Stage of Screening (Citation Tracking / Reference Checking Searches) (FS)

## **For Classification/Categorisation/Mapping**

- Classification Searches in Evidence Synthesis Context based on Purpose (FS)
- Classification Tools that use Agentic Searches (FS)

## **When Writing Up**

- For Background (AB)
- To support Methodological Justifications (AB)

# Head to Head Comparison

| Tool             | Typical monthly subscription*   | Main data sources   | Core use case focus                                     | Stand-out / innovative features  |
|------------------|---|---|---|--|
| <b>Undermind</b> | Freemium; Pro \$16 per month, billed annually   | Broad scientific literature; follows citation graphs across papers          | Deep, autonomous literature review and novelty checking | <b>Autonomous iterative search</b> that reads hundreds–thousands of papers, traverses full citation graph, and returns a synthesized report with relevance explanations.   |
| <b>Elicit</b>    | Free tier; Plus for \$12 a month and generate more reports and export your results to flexible formats like CSV, RIS, and BIB.; higher research plans from ~\$42–\$49+; enterprise custom (usually billed annually) | ~138M+ academic papers and ~500k+ clinical trials, with growing sources     | End-to-end evidence synthesis and systematic reviews    | <b>Semantic paper search</b> , highly customizable research tables, automated research reports, and a <b>dedicated systematic review workflow</b> with large-scale data extraction and sentence-level citations. |
| <b>Scite</b>     | Free tier Personal Access for individual use £14/ monthly   | ~200M+ scholarly sources and 1.3B+ citations from journals, preprints, etc. | Evaluating reliability of papers via citation context   | <b>Smart Citations</b> that classify whether later papers support, contrast, or just mention a claim; AI assistant plus full-text search and dashboards for citation-aware literature review.                    |
| <b>Consensus</b> | Free tier; Pro ≈ \$10/user/month; Deep ≈ \$45/user/month; enterprise/custom tiers   | 200M+ peer-reviewed research papers across disciplines                      | Fast question-answering over scientific literature      | AI search that returns <b>evidence-based answers with citations</b> , a <b>Consensus Meter</b> showing level of agreement, <b>Study Snapshots</b> , and a Copilot-style synthesis across multiple papers.        |

# Where Do they get their References from?

- Most Agentic Search tools use one or more Knowledge Graphs (**Lens.org, OpenAlex, or Semantic Scholar**).
- **OpenAlex** is generally the strongest choice for programmatic access and reproducible evidence synthesis workflows given its fully open bulk data and permissive licensing — which matters a lot for the type of transparent, auditable methodology expected in systematic reviews.
- **Lens.org** is uniquely valuable when patent literature is in scope.
- **Semantic Scholar's** semantic similarity features make it useful for exploratory searching but its coverage is less uniform across disciplines than **Lens.org** or **OpenAlex**.

Synthesized comparative data across three academic research platforms >

| Feature                           | Lens.org   | OpenAlex   | Semantic Scholar  |
|-----------------------------------|--|--|---|
| Ownership                         | Cambia (Australian non-profit)   | OurResearch (US non-profit)  | Allen Institute for AI / AI2 (US non-profit)  |
| Number of records                 | ~300M+ scholarly works; also indexes ~140M patents   | ~250M+ works (as of 2024-25)   | ~220M+ papers   |
| Key sources used                  | Crossref, PubMed, Microsoft Academic Graph (legacy), CORE, DOAJ, EPO/USPTO (patents)                       | Crossref, PubMed, DOAJ, ROR, ORCID, institutional repositories; built partly as successor to Microsoft Academic Graph        | Publisher crawls, Crossref, PubMed, arXiv, Semantic Scholar corpus; strong coverage of CS and biomedical literature   |
| Access — basic search             | Free, no registration required   | Free, no registration required   | Free, no registration required  |
| Access — API                      | Free API available; rate limits apply; registration recommended  | Fully open REST API; no API key required for most use; very generous rate limits; bulk data snapshots freely downloadable    | Free API with registration; rate limits apply; bulk data releases available via Semantic Scholar Open Research Corpus |
| Advanced / institutional features | Premium institutional subscriptions unlock enhanced patent analytics, saved collections, and team features | No premium tier — entirely open by design  | No paid tier; some features (e.g. Research Feeds, Alerts) require free account  |
| Cost                              | Free for research use; institutional licensing for premium patent/analytics features                       | Entirely free and open   | Entirely free   |
| Open data                         | Partial — some data open, but not all bulk exports freely available  | Fully open — entire dataset downloadable under CC0 licence   | Open Research Corpus available for download, though with some licence conditions                                      |
| Particular strengths              | Patent + scholarly literature integration; good for translational/IP-related searches                      | Best-in-class openness; rich metadata including citations, affiliations, concepts, funders; strong for programmatic/bulk use | AI-powered semantic search; citation context; good for literature mapping in CS and biomedicine                       |

# Specific Details of Knowledge Bases

- **Elicit**, **Undermind**, and **Consensus** are broadly retrieval-and-synthesis tools built on top of Semantic Scholar (and, for **Consensus**, OpenAlex),
- *Note: For systematic review purposes, heavy dependence of three tools on the same underlying database (Semantic Scholar) so what does a search across multiple agentic tools (**Elicit**, **Undermind**, and **Consensus**) actually add in terms of independent retrieval?*
- NB. **scite** stands apart from the other three in both its data architecture and its function: **scite** is a “citation intelligence platform with a knowledge base assembled through publisher partnerships”. Gives **scite** **far better full-text coverage** but with **subscription costs**, while **Elicit**, **Undermind**, and **Consensus** offer meaningful free tiers.

| Feature   | Elicit  | Undermind   | Consensus   | scite  |
|---|---|---|---|--|
| <b>Primary knowledge base(s)</b>  | Semantic Scholar; some sources also indicate use of OpenAlex <a href="#">Tamusa</a>                                       | Semantic Scholar database, including sources from PubMed and arXiv <a href="#">Projectpedia</a> | Semantic Scholar, OpenAlex, and their own crawl of the scholarly web <a href="#">Oregon State University</a>                                | Proprietary database built from direct agreements with 30+ publishers including Wiley and SAGE, plus open access content; not reliant on Semantic Scholar <a href="#">Scite</a>                        |
| <b>Volume of records</b>  | 138+ million papers <a href="#">Elicit</a> , plus 545,000+ clinical trials from ClinicalTrials.gov <a href="#">Elicit</a> | 200+ million articles via Semantic Scholar <a href="#">AllToolHub</a>                           | 200+ million peer-reviewed papers <a href="#">Elastic</a>   | 280M+ sources with 1.6B+ citation statements analysed and classified <a href="#">Scite</a>   |
| <b>Unique data feature</b>  | Clinical trials integration; systematic review workflow   | Primarily searches abstracts and metadata; full-text discovery planned <a href="#">Lex</a>      | Three-stage hybrid search combining semantic AI and BM25; proprietary relevance-checking models <a href="#">Loyola Marymount Univers...</a> | Smart Citations — classifies each citation as supporting, contrasting, or mentioning, based on full-text extraction <a href="#">Einsteinmed</a>  |
| <b>Coverage strengths/gaps</b>  | Broad but inherits Semantic Scholar's weaker humanities coverage  | Works best with specific, detailed empirical queries <a href="#">Tamusa</a>                     | Strong in sciences, weaker in social sciences, does not cover arts or humanities <a href="#">Project MUSE</a>                               | Stronger than others on paywalled content given publisher agreements; full-text indexed  |
| <b>Distinguishing characteristic vs. the three databases in the prior table</b> | Workflow automation for screening and extraction; not just retrieval  | Agentic iterative search that adapts based on what it finds, rather than a single-pass query    | Synthesises a "consensus meter" across retrieved papers; oriented to answerable yes/no questions  | Entirely distinct model — rather than answering topic questions, analyses citation relationships at the paper level, classifying how studies relate to one another <a href="#">Effortless Academic</a> |

# How do they “Choose” their References?

- A combination of Knowledge Graph and Retrieval-Augmented Generation , so-called Safety Retrieval-Augmented Generation, pushes the hallucination of references to zero
- HOWEVER, since knowledge graphs grab records from multiple sources, the records or the final produced search report are likely to have duplicates that AI cannot recognise to group as one - cites same paper as two or more unique references (**double counting/double weighting**).
- RAG is process of optimizing output of a large language model, so it references an authoritative knowledge base outside of its training data sources before generating a response.
- Large Language Models (LLMs) are trained on vast volumes of data and use billions of parameters to generate original output for tasks like answering questions, translating languages, and completing sentences.
- RAG extends the capabilities of LLMs to specific knowledge bases, all without the need to retrain the model. It is a cost-effective approach to improving LLM output so it remains relevant, accurate, and useful in various contexts.

## About Undermind

- For Undermind, free version searches titles/abstracts; paid version searches full text as well (when available).
- Can use Undermind for refining the research/review question (an automated “reference interview”), even when you don't need to run an agentic search [FS/SCHARR Team].

# Topic Scoping

## Realist Evaluations of Companion Animals in Health and Social Care.

### Undermind

#### Realist evaluations of companion animals in health and social care

The search identified only one explicitly realist evaluation focused on companion animals in health/social care—the Dementia Dog Project realistic evaluation [1](#)—but uncovered a substantial surrounding body of mechanism-rich, context-sensitive studies and reviews that are highly amenable to realist synthesis and theory-building [2](#) [3](#) [4](#) [5](#) [6](#) [7](#) [8](#) [9](#) [10](#) [11](#) [12](#) [13](#) [14](#).

- > Overall Yield and Fit to the Realist Companion-Animal Question
- > Explicitly Realist Evidence on Companion Animals in Health/Social Care
- > Mechanism-Rich, Non-Realist Work Highly Relevant to Realist Theory-Building
- > Cross-Cutting Mechanism Families and How Animals Are Positioned
- > Key Implications and Gaps for Future Realist Work
- > Bottom Line for Your Realist Programme

#### Categories

- > Comparative Overview: How These Papers Relate to Realist Inquiry on Companion Animals in Health/Social Care
- > Comparative Table 1: Realist Features and Theoretical Framing

| Ref   | Study type / design                                     | Explicitly realist?                         | Use of CMO / generative mechanisms?   | How companion animals are positioned   |
|---|---|---|---|--|
| <a href="#">1</a> Dementia Dog realistic evaluation               | Realistic evaluation of dementia assistance dog pilot   | Yes – self-described “realistic evaluation” | Yes – explicit focus on context, mechanisms, outcomes; aims to explain why integration of dogs works in some situations and not others  | Dogs as <i>assistance animals</i> integrated into community dementia care; conceptualised as <b>resources</b> that trigger mechanisms (e.g. routines, social catalysts) in specific family/organisational contexts |
| <a href="#">2</a> Children’s perceptions (AAI) thematic synthesis | Thematic synthesis of qualitative child accounts in AAI | No  | Uses “mechanisms” in a broad sense – conceptual model of <i>potential mechanisms</i> in child–animal relationship; not structured as CMO and no realist frame <a href="#">2</a> | Animals in AAls (typically dogs, horses) as <b>relational partners</b> and <b>affective resources</b> influencing engagement and socio-emotional change  |



|  |   |
|--|---|
| <p><a href="#">1</a> 99% <a href="#">2019</a> <a href="#">00 22</a></p> <p>Exposing the mechanisms underlying successful animal-assisted interventions for people with dementia: A realistic evaluation of the Dementia Dog Project</p> <p>L. Ritchie, ..., and Barbara Sharp</p> <p>Dementia   23 Jul 2019   15 Citations</p>                   | <p>Demonstrates a realist evaluation of a dementia-focused animal-assisted intervention.</p> <p>Uses realist (context–mechanism–outcome) methods to evaluate a pilot Dementia Dog Project with four couples, triangulating interviews, case reports terminology/methods in healthy/social care focusing on companion animals.</p> |
| <p><a href="#">2</a> 99% <a href="#">2024</a> <a href="#">00 05</a></p> <p>Children’s perceptions of animals in animal assisted interventions: a thematic synthesis</p> <p>Laura M Peterson and Jennifer M. Putney</p> <p>Qualitative Research in Psychology   10 Mar 2024   1 Citation</p>  | <p>Develops a conceptual model of mechanisms underpinning children’s experiences in AAls.</p> <p>Synthesizes qualitative studies that directly asked children with social/emotional difficulties about interactions with animals to identify perceived mech</p>   |
| <p><a href="#">3</a> 74% <a href="#">2007</a> <a href="#">00 01</a></p> <p>Maintaining affectional bonds: The significance and meaning of companion animals for pet owners living in homes for older people</p> <p>Susan Pooley</p> <p>FPOP Bulletin: Psychology of Older People   1 Oct 2007   1 Citation</p>                                   | <p>Develops a grounded-theory model of companion animals’ role for older people.</p> <p>Uses interviews (9 residents, 7 managers) and observations in care homes to build a theory about how pets help maintain affectional bonds. Not a rea (attachment, pet characteristics) in care-home settings.</p>                         |
| <p><a href="#">4</a> 71% <a href="#">2024</a> <a href="#">00 0</a></p> <p>Exploring In-Session Engagement in Equine-Assisted Services for Children and Youth Experiencing Disability: A Scoping Review</p> <p>Lena M Aewerdieck, ..., and Jean Hay-Smith</p> <p>Journal of Integrative and Complementary Medicine   8 Jul 2024   0 Citations</p> | <p>Identifies mechanisms influencing engagement in equine-assisted services for disabled children/youth.</p> <p>Conducts a scoping review of 30 studies, extracting study characteristics and using inductive content analysis to derive three mechanism themes. Uses evaluation/terminology.</p>                                 |

# Assistance In defining the Topic

Search Architect

Identify and summarise the literature about the use of the Learning Partner Model in UK Local Authorities, particularly in connection with involvement in research or research utilization.

- Thinking
- Searching for papers
- Thinking
- Searching for papers
- Thinking

This sounds like a search around **embedded or external "learning partner" arrangements in councils** — where a partner supports improvement, reflection, evaluation, or evidence use — with a particular interest in whether that connects to **doing research, partnering with researchers, or using research in decision-making**.

- Should I keep this broad across all UK local authority functions, or is your real interest mainly one area such as children's services, public health, adult social care, or improvement programmes?**  
This matters because the literature may sit in quite different silos even when the underlying model is similar.
- If the phrase "Learning Partner Model" turns out to be used inconsistently, do you want the search to include closely related models** — for example research-practice partnerships, embedded researchers, improvement partners, critical friends, or evaluation/learning partnerships — **or only papers that are clearly about the Learning Partner Model itself?**  
I'm asking because direct terminology in this area is often patchy, especially in local government.

Keep it across broad functions look for specific mentions of the "learning partner" label

Thinking

Understood — I'll keep it **cross-functional across UK local authorities** and prioritize **explicit uses of the "learning partner" label**, rather than broad adjacent models.

One caution: **deep search only covers academic papers**, so if "learning partner" is mostly discussed in council reports, programme documents, or consultancy material, the academic yield may be thin. We can still search for the academic literature around it.

- Do you want the search to stay strictly on UK local authorities, or include papers on closely adjacent UK public bodies only when they discuss local-authority partnerships directly?**  
This affects whether we miss papers that study council-facing arrangements from the outside.
- For the research angle, should I focus only on papers where the learning partner is tied to research activity or research use, or also include papers that describe the model more generally and then note whether research involvement is present?**  
That choice changes whether the search is narrower or more mapping-oriented.

Only UK local authorities - any mention of research involvement but the greater the intensity of involvement the better

## Learning partner model in UK local authorities

Evidence on UK councils or local authorities explicitly using a learning partner or learning partnership role, especially where that role is tied to embedded evaluation, research involvement, co-production, or sustained research utilisation across service areas.

Search completed · 50 papers found · Yesterday

Search goal

8 subtopics discovered

| REL.   | YEAR | CIT/YR | PDF | TITLE   |
|--------|------|--------|-----|---|
| Moo25  | 2025 | 0.0    |     | <b>Embedding evaluation into a policy-practice-research partnership using theory of change: case study of Designing London's Recovery Programme</b><br>G. Moore and J. McLaren<br><i>Research for All</i>                               |
| Sou01  | 2001 | 0.0    |     | <b>Developing a Learning Partnership to increase organisational learning and knowledge management</b><br>A. Southworth and Stead  |
| Rod03  | 2003 | 0.3    |     | <b>National evaluation of Learning Partnerships : final report</b><br>J. Rodger, G. Cowen, and J. Brass   |
| Che22  | 2022 | 2.9    |     | <b>'What I really want is academics who want to partner and who care about the outcome': findings from a mixed-methods study of evidence use in local government ...</b><br>M. Cheetham, ... A. Adamson<br><i>Evidence &amp; Policy</i> |
| Cla08b | 2008 | 0.2    |     | <b>Will the lessons be learned? reflections on local authority evaluations and the use of research evidence</b><br>J. Clark and E. Hall<br><i>Evidence &amp; Policy: A Journal of Research, Debate and Practice</i>                     |
| Hal06  | 2006 | 0.1    |     | <b>Ghosts at the feast? The role of research centres in supporting innovative practice in local authorities</b><br>Hall, Clark, and McCaughey   |

# Undermind

Export

Generate Report

## Classification/Conceptualisation

### Working definition

A tight definition supported by the direct literature has five features:

- Distinct partner role**

The partner is identifiable as a learning-focused actor rather than just a supplier of research or a temporary project worker (Moo25).

- Proximity to delivery and decision making**

The role sits close enough to programme activity to inform adaptation while work is ongoing (Moo25, Cla08b).

- Collective reflection**

The partner helps convene discussion, clarify goals, and turn emerging evidence into shared reflection rather than producing findings at a distance (Moo25).

- Developmental evaluation logic**

The strongest example ties the role to theory of change work, participatory action research, and democratic evaluation, all aimed at learning during implementation rather than only after it (Moo25).

- Research involvement without becoming an embedded researcher**

Research informs the role, and may be co-produced through evaluation and inquiry, but the partner remains conceptually different from a researcher employed or collocated as part of the authority's internal research system (Moo25, Hol24).

# Literature Characteristics, Structure and Organisation

## Direct evidence on learning partners

The direct evidence base is small.

| Paper                  | Fit to tight definition | Research involvement                 | Contribution  |
|------------------------|-------------------------|--------------------------------------|---|
| <a href="#">Moo25</a>  | Strong                  | High                                 | Clearst account of a learning partner role linked to developmental evaluation, participatory action research, theory of change, and collective reflection inside a local government programme |
| <a href="#">Sou01</a>  | Moderate                | Unclear from available record        | Indicates explicit use of the learning partnership label in relation to organisational learning and knowledge management  |
| <a href="#">Kes02</a>  | Moderate                | Low or unclear from available record | Shows learning partnership language in local government, but accessible detail points more toward workforce and partnership arrangements than research utilisation                            |
| <a href="#">Kes02b</a> | Moderate                | Low or unclear from available record | Suggests a link between learning needs and partnership agreements in local government rather than an explicit research infrastructure   |
| <a href="#">Cla96</a>  | Partial precursor       | Low                                  | Offers a conceptual frame around the learning local authority rather than a developed research-linked learning partner model  |
| <a href="#">Rod03</a>  | Weak or unclear         | Unclear                              | Uses learning partnership language, but the accessible record gives limited basis for treating it as a local authority research model   |



### Chronological Development of Ideas and Methods

### Expansion into Reviews and Mechanism-Oriented Syntheses (2021–2024)

### Thematic and Methodological Trends Over Time

#### 1. From "pet effects" to contextualised, relational mechanisms

Across the timeline:

- **Early work** ([3](#) [7](#)) moves from generic "pets benefit wellbeing" to:
  - Context-specific roles of pets in **institutional living** [3](#) and **chronic illness management** [7](#).
  - Detailed exploration of **identity, emotional regulation, and social mediation**.
- **Later work** ([1](#) [5](#) [8](#) [9](#) [12](#) [2](#) [4](#) [6](#)) progressively:

# Undermind “Evaluations”

- **Undermind:** Tay (New AI Tool Shows the Power of Successive Search) - benchmark-driven evaluation of **Undermind** versus Google Scholar, showing substantial improvements in locating relevant results and expanded coverage, achieved via iterative, citation-trail-aware searches.
  - >>> Undermind’s successive-search strategy **increases the density of highly relevant results and broadens the set of retrieved literature compared to traditional search engines** (Tay, 2024).
- Giustini (**Undermind.ai** product review) characterizes **Undermind** as a sophisticated AI search tool for health sciences librarians; while it provides seed-papers, summaries, and match scores, it notes slower response times and the need to balance cost and utility.
  - >>> Situates Undermind among other AI search tools (Elicit, Scite, Consensus) and discusses its fit in knowledge syntheses and librarian workflows (Giustini, 2025).

## References:

Giustini, D. M. (2025). Undermind.ai (product review). *Journal of the Canadian Health Libraries Association Journal De l’Association Des bibliothèques De La Santé Du Canada*, 46(2), 42–46. <https://doi.org/10.29173/jchla29854>

Tay A. New AI tool shows the power of successive search. Katina: Librarianship Elevated. 2024 Nov 12.

<https://katinamagazine.org/content/article/main-section/2024/undermind-ai-shows-the-power-of-successive-search>

# Your Experience of Undermind?

## ELICIT – Free Tier

November 17, 2025

### Does egg consumption help to restrict hair loss?

The current evidence does not support that consuming eggs as food restricts hair loss, as studies examined only highly processed peptide extracts or egg shell membrane components rather than dietary egg consumption.

#### ABSTRACT

This review examined whether egg consumption helps restrict hair loss by analyzing five sources, including two reviews and three primary research papers. While mechanistic evidence demonstrates that water-soluble peptides extracted from egg yolks can stimulate vascular endothelial growth factor (VEGF) production through the insulin growth factor-1 receptor and hypoxia-inducible factor-1 $\alpha$  pathway, and both in vitro and animal studies show these peptides enhance hair growth, these findings do not support the conclusion that consuming whole eggs restricts hair loss. The interventions studied used highly processed peptide extracts from egg yolks or egg shell membrane components—forms that differ substantially from dietary egg consumption in terms of concentration, bioavailability, and processing. The single clinical trial reporting positive outcomes (90-day improvements in hair count and loss reduction) used a multi-ingredient supplement containing egg shell membrane alongside biotin, ellagic acid, and other compounds, preventing attribution of effects specifically to the egg component.

No included studies examined actual egg consumption as food in relation to hair loss outcomes. The evidence is limited by small sample sizes (30-120 participants), lack of blinding, and reliance on abstract-only publications. While specific egg-derived peptide extracts show promise as therapeutic agents through defined molecular pathways, the current evidence cannot address whether consuming eggs—raw, cooked, or otherwise—affects hair loss. The mechanistic plausibility of concentrated peptide extracts does not translate to evidence for whole egg consumption.

#### METHODS >

We analyzed 5 sources from an initial pool of 50, using 8 screening criteria. Each paper was reviewed for 7 key aspects that mattered most to the research question. [More on methods](#)

#### RESULTS

##### Characteristics of Included Studies

The review included five sources examining egg-based interventions for hair loss, comprising two primary experimental studies, two systematic reviews, and one general discussion paper. Full text availability varied across sources, limiting the depth of analysis for some studies.

# ELICIT – Free Tier

| Egg Consumption and Hair Loss <span style="float: right;">●●●●● Extraction results View only ▾</span>   |   |  |  |  |  |   |   |
|---|---|--|--|--|--|---|---|
| <a href="#">Get full-texts?</a> <span style="float: right;">✕</span>  |   |  |  |  |  |   |   |
| Paper   | Study Design  | Egg Intervention Details   | Participant Characteristics  | Hair Outcomes Measured   | Hair Loss Results  | Biological Mechanisms   | Safety Profile  |
| <p><b>Effects on Oral Supplementation of Nutraceuticals formulations - Trichovitals® in young adults for healthy maintenance of hair growth</b></p> <p>C. Marimuthu, Jaya Ganesh Murugan, Sruthi Sukumar, Priya M Rajendran</p> <p>📄 Research Journal of Topical and Cosmetic Sciences, 2022, 2 citations, <a href="#">DOI</a></p> <p>🔍 Elicit search: Abstract only</p>                        | <ul style="list-style-type: none"> <li>- Study design: Pilot study with a control group *</li> <li>- Study duration: 90 days (12 weeks) *</li> <li>- Sample size: 50 young aged volunteers *</li> <li>- Control/comparison groups used: Control group without oral supplements *</li> <li>- Blinding status: Not mentioned *</li> <li>- Key methodological strengths or limitations: Use of self-assessment and objective measurements *; small sample size; blinding status not mentioned *</li> </ul>   | <ul style="list-style-type: none"> <li>- Specific form of egg used: Natural Egg Shell Membrane *</li> <li>- Processing method: Extracted and processed into supplement form</li> <li>- Dosage/amount consumed: 500mg/day</li> <li>- Frequency of consumption: Daily</li> <li>- Duration of treatment: 12 weeks (90 days) *</li> <li>- Route of administration: Oral *</li> <li>- Co-interventions or additional ingredients: Ellagic acid, Sabberly, Biotin, Tetra hydro curcumin, Murraya koenigii *</li> </ul> | <ul style="list-style-type: none"> <li>- Sample size: 50 *</li> <li>- Demographics: Young-aged adults (no specific age range or gender distribution) *</li> <li>- Type of hair loss studied: Not mentioned (general hair maintenance) *</li> <li>- Baseline hair status or severity: Not mentioned *</li> <li>- Health status and any relevant medical conditions: Not mentioned</li> <li>- Previous hair loss treatments: Not mentioned *</li> <li>- Geographic location/population studied: Not mentioned</li> </ul> | <ul style="list-style-type: none"> <li>- Primary and secondary endpoints related to hair: Overall hair volume, Scalp coverage, Thickness of hair body, Softness of hair body, Hair shine, Number of Hairs Lost on Average Day *, count of terminal hairs, reduction in hair loss *, hair thickness, reduction in hair loss, hair breakage, improvement in hair growth *</li> <li>- Measurement methods used: Self-assessment questionnaire *, mean hair count, pull test, wash test, comb and count test *</li> <li>- Time points assessed: After 90 days of treatment *</li> <li>- Specific parameters measured: Hair thickness *, reduction in hair loss, improvement in hair growth</li> <li>- Validation status of measurement tools: Not mentioned *</li> </ul> | <ul style="list-style-type: none"> <li>- Direction of effect: Improvement *</li> <li>- Comparison to control groups: Significant improvement over placebo group</li> <li>- Time to observable effects: 90 days *</li> <li>- Not mentioned: Quantitative results (effect sizes, p-values, confidence intervals) *, magnitude of change from baseline *, subgroup differences *, durability of effects *</li> </ul>  | <ul style="list-style-type: none"> <li>- Specific bioactive compounds identified: Natural Egg Shell Membrane (source of Collagen types I, III, V, X and Elastin), Ellagic acid, Sabberly (10% beta-glucogallin), Biotin, Tetra hydro curcumin, Murraya koenigii (source of iron) *</li> <li>- Mechanism of action described: Improvements in hair thickness, reduction in hair breakage, and improvement in hair growth *</li> <li>- Biomarkers measured: Not mentioned</li> <li>- Mechanistic evidence provided: Not mentioned *</li> </ul>  | <p>Not mentioned (the abstract does not provide any information on the safety profile of Trichovitals) *</p>  |
| <p><b>Hair loss: A review of the role of food bioactive compounds</b></p> <p>G. Wei, D. Martirosyan</p> <p>📄 Bioactive Compounds in Health and Disease, 2019, 2 citations, <a href="#">DOI</a></p> <p>🔍 Elicit search: Full text</p>  | <ul style="list-style-type: none"> <li>- Study design: Systematic review *</li> <li>- Study duration: Not explicitly mentioned, but reviews literature from the past decade *</li> <li>- Sample size: Varies by study *; e.g., 25 participants in a rice bran clinical trial *, 50 patients in a Korean Red Ginseng trial *</li> <li>- Control/comparison groups: Used in some studies; e.g., placebo group in rice bran trial *, standard corticosteroid treatment group in Korean Red Ginseng trial *</li> <li>- Blinding status: Double-blind randomized control trial mentioned for one study *</li> <li>- Key methodological strengths: Comprehensive systematic review, inclusion of both in vitro and in vivo studies *</li> <li>- Key methodological limitations: Reliance on observational studies *, lack of consistency in dosing regimens and sample sizes *</li> </ul> | <ul style="list-style-type: none"> <li>- Specific form of egg used: Egg yolks *</li> <li>- Processing method: Extracted peptides *</li> <li>- Dosage/amount consumed: Not mentioned</li> <li>- Frequency of consumption: Not mentioned</li> <li>- Duration of treatment: Not mentioned *</li> <li>- Route of administration: Not mentioned</li> <li>- Any co-interventions or additional ingredients: Not mentioned</li> </ul>   | <p>Not mentioned (the paper is a review article and does not provide specific participant characteristics for a single study) *</p>  | <ul style="list-style-type: none"> <li>- Primary endpoints: Total hair count, hair diameter, overall hair density *</li> <li>- Measurement methods: Visual assessment by study investigators</li> <li>- Time points assessed: 16 weeks for rice bran extract study *</li> <li>- Specific parameters measured: Hair density, thickness, growth rate *</li> <li>- Validation status: Randomized, double-blind, placebo-controlled trials *</li> </ul>  | <ul style="list-style-type: none"> <li>- Berry formulations: Increased hair growth by up to 20% in cell culture.</li> <li>- Raspberry ketone: Improved hair growth in 50% of alopecia study participants. *</li> <li>- Mediterranean diet: Reduced odds of developing androgenetic alopecia by 56-57% *</li> <li>- Rice bran extract: Statistically significant increases in total hair count, hair diameter, and overall hair density in male patients.</li> <li>- Korean Red Ginseng: Improved hair density, thickness, and growth when used with corticosteroids. *</li> <li>- Marine supplements: Increased total hair count, total hair density, and terminal hair density.</li> <li>- Egg yolks: Stimulated VEGF and proliferation of human dermal papilla cells. *</li> </ul> | <ul style="list-style-type: none"> <li>- Bioactive compounds: Water-soluble hair growth peptides (HGP) *</li> <li>- Cellular/molecular pathways: Activation of insulin-like growth factor-1 receptor, induction of hypoxia-inducible factor-1α transcription pathway *</li> <li>- Mechanism of action: Stimulation of vascular endothelial growth factor (VEGF *, ) expression *, proliferation of human dermal papilla cells *</li> <li>- Biomarkers: VEGF</li> <li>- Mechanistic evidence: Observed in murine model and female pattern hair loss model *</li> </ul>   | <ul style="list-style-type: none"> <li>- Adverse events reported: Not mentioned *</li> <li>- Dropout rates and reasons: Not mentioned *</li> <li>- Contraindications mentioned: Not mentioned *</li> <li>- Long-term safety data: Not mentioned *</li> <li>- Comparison of safety to standard treatments: Functional foods are considered safer with fewer side effects compared to synthetic treatments *</li> <li>- Any special precautions noted: Use of tablet-based administration may limit validity as functional foods *</li> </ul> |
| <p><b>Naturally Occurring Hair Growth Peptide: Water-Soluble Chicken Egg Yolk Peptides Stimulate Hair Growth Through Induction of Vascular Endothelial Growth Factor Production.</b></p> <p>Toshio Nakamura, H. Yamamura, Kyungho Park, C. Pereira, Y. Uchida, and 3 more</p> <p>📄 Journal of Medicinal Food, 2018, 10 citations, <a href="#">DOI</a></p> <p>🔍 Elicit search: Abstract only</p> | <ul style="list-style-type: none"> <li>- Study design: In vitro and animal study</li> <li>- Study duration: Not mentioned *</li> <li>- Sample size: Not mentioned</li> <li>- Control/comparison groups used: Not mentioned</li> <li>- Blinding status: Not mentioned</li> <li>- Key methodological strengths or limitations mentioned: Not mentioned *</li> </ul>   | <ul style="list-style-type: none"> <li>- Specific form of egg used: water-soluble chicken egg yolk peptides</li> <li>- Processing method: extraction (implied by "water-soluble") *</li> <li>- Dosage/amount consumed: Not mentioned</li> <li>- Frequency of consumption: Not mentioned</li> <li>- Duration of treatment: Not mentioned</li> <li>- Route of administration: Likely oral *</li> <li>- Any co-interventions or additional ingredients: Not mentioned</li> </ul>                                    | <p>Not mentioned (the abstract does not provide specific participant characteristics such as sample size, demographics, baseline hair status, health status, or previous treatments) *</p>   | <ul style="list-style-type: none"> <li>- Primary endpoint: VEGF production *</li> <li>- Secondary endpoint: Hair growth *</li> <li>- Measurement methods: Not mentioned</li> <li>- Time points assessed: Not mentioned</li> <li>- Specific parameters measured: Not mentioned</li> <li>- Validation status of measurement tools: Not mentioned *</li> </ul>  | <ul style="list-style-type: none"> <li>- Direction of effect: Improvement *</li> <li>- Magnitude of change from baseline: Not mentioned *</li> <li>- Comparison to control groups: Not mentioned</li> <li>- Time to observable effects: Not mentioned</li> <li>- Durability of effects: Not mentioned *</li> <li>- Subgroup differences in response: Not mentioned *</li> </ul>  | <ul style="list-style-type: none"> <li>- Specific bioactive compounds identified: Water-soluble peptides from chicken egg yolk (named "hair growth peptide (HGP)") *</li> <li>- Cellular or molecular pathways involved: Insulin growth factor-1 receptor activation-induced hypoxia-inducible factor-1α transcription pathway</li> <li>- Mechanism of action described: Induction of VEGF expression *</li> <li>- Biomarkers measured: VEGF *</li> <li>- Mechanistic evidence provided: In vitro studies on human hair follicle dermal papilla cell growth *; in vivo studies on murine hair growth *</li> </ul> | <p>Not mentioned (the abstract does not provide specific safety profile information for the water-soluble chicken egg yolk peptides) *</p>  |
| <p><b>Rethinking of positive effects of eggs on hair in East Asia</b></p> <p>Jin-Woong Jung, Ki Han Kwon</p> <p>📄 Journal of Cosmetic Dermatology, 2022, 0 citations, <a href="#">DOI</a></p> <p>🔍 Elicit search: PDF link available</p>  | <p>Not mentioned (the abstract does not provide details on the study design, duration, sample size, control/comparison groups, blinding status, or methodological strengths/limitations) *</p>  | <p>Not mentioned (the abstract does not provide any specific details about the egg-based intervention) *</p>   | <p>Not mentioned (no information on participant characteristics is included in the abstract) *</p>   | <p>Not mentioned (the abstract does not specify any hair outcomes measured) *</p>  | <p>Not mentioned (the abstract does not provide specific findings or results related to hair outcomes) *</p>   | <p>Not mentioned (the abstract does not provide any information on biological mechanisms by which eggs affect hair)</p>   | <p>Not mentioned (the abstract does not provide any information on the safety profile of eggs) *</p>  |

# Elicit Evaluation

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Empirical evaluation by Lau and Golder (comparison of Elicit AI to traditional searching in evidence syntheses). Elicit (AI-assisted) searches have limited sensitivity and should not replace traditional searches, though they offer high precision and potential utility in complementing traditional workflows.

- Reinforces theme that AI search tools are valuable as supplements but are not yet stand-alone replacements for systematic searching (Lau & Golder, 2025).

## Reference:

- Lau, O. and Golder, S. (2025). Comparison of Elicit AI and Traditional Literature Searching in Evidence Syntheses Using Four Case Studies. *Cochrane Evidence Synthesis and Methods*, 3(6). <https://doi.org/10.1002/cesm.70050>

# Your Experience of Elicit?

# Consensus – Free Tier

**Positive  
non-risk  
averse  
conclusion**

Consensus reports the pros and cons **without considering the quality and design of the studies** (e.g., case reports = RCTs).

**Consensus Meter** – BUT if we Add Possibly, Mixed and No results together we have more studies (n = 7) than Yes (n = 6) – but that is vote-counting – and some studies are Systematic Reviews.

Impressive numbers but no. of included studies will always = **maximum of 50! [free tier]**

the effectiveness of yoga-based interventions as reported in RCTs with any combination of yoga interventions, including physical postures, breathing exercises and meditation in reducing levels of psychological...

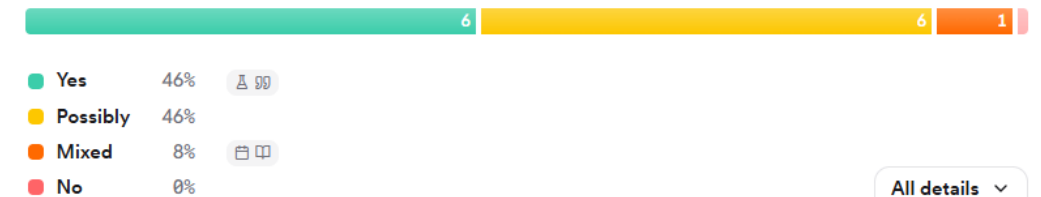
Deep · 8 steps · 50 sources >

## Yoga-based interventions in randomized controlled trials reduce psychological distress among familial caregivers of individuals with chronic neurological disorders.

### 1. Introduction

Familial caregivers of individuals with chronic neurological disorders, such as dementia, Parkinson's disease, stroke, and brain tumors, often experience significant psychological distress, including stress, anxiety, depression, and reduced quality of life. Yoga-based interventions, which typically combine physical postures, breathing exercises, and meditation, have been increasingly studied as supportive therapies for this population. Recent systematic reviews and meta-analyses of randomized controlled trials (RCTs) consistently report that yoga interventions can significantly reduce psychological distress and improve mental well-being among caregivers, particularly in dementia and neuro-oncology contexts [6](#) [1](#) [12](#) [4](#) [+6 MORE](#). The evidence base includes both individual and dyadic (patient-caregiver) interventions, with some studies suggesting that individual caregiver-focused yoga may yield greater subjective benefits than dyadic approaches [8](#) [24](#). While most studies report improvements in stress, anxiety, depression, and quality of life, the effects on caregiver burden are less consistent, and methodological limitations such as small sample sizes and moderate risk of bias are common [1](#) [6](#) [12](#) [47](#). Nevertheless, the overall consensus is that yoga-based interventions are feasible, acceptable, and beneficial for reducing psychological distress in this vulnerable group [6](#) [1](#) [3](#) [4](#) [+6 MORE](#).

Consensus Meter N = 13



All details ▾

### 2. Methods

A comprehensive search was conducted across over 170 million research papers in Consensus, encompassing databases such as Semantic Scholar, PubMed, and others. The search strategy included terms related to yoga-based interventions, psychological distress, caregivers, and chronic neurological disorders, with a focus on RCTs and systematic reviews. In total, 1,049 papers were identified, 599 were screened, 346 were deemed eligible, and 50 were included in this review.

# Your Experience of Consensus?

# Scite Assistant

## As Narrative:

## :As Tables

| Reference   | Response  |
|---|---|
| <p>ARE eggs good for hair loss?</p> <p>1 <b>Nütrisyonel Hastalıkların Deri Bulguları</b><br/>Erdoğan Terzi, Aynur Akçoyol 2016<br/><i>J Contemp Med</i><br/><a href="#">View PDF</a> <a href="#">Add to dashboard</a> <a href="#">Cite</a></p>  | Eggs can support hair health due to their biotin and protein content, but rely on a balanced diet and consider biotin-rich foods; eggs alone do not prevent or treat hair loss.   |
| <p>2 <b>Zinc and Skin Disorders</b><br/>Yusichi Ogawa, Manao Kinoshita, Shinji Shimada et al. 2018<br/><i>Nutrients</i><br/>217   2   128   0<br/><a href="#">Download PDF</a> <a href="#">Add to dashboard</a> <a href="#">Cite</a></p>  | Eggs are not a stated treatment or evidence-based remedy for hair loss in the provided reference.   |
| <p>3 <b>Role of nutritional supplements in selected dermatological disorders: A review</b><br/>Kabir Sardana, Soumya Sachdeva 2021<br/><i>J of Cosmetic Dermatology</i><br/>27   0   19   0<br/><a href="#">Download PDF</a> <a href="#">Add to dashboard</a> <a href="#">Cite</a></p>    | Eggs can be a nutritious protein source in a balanced diet and may support hair health indirectly, but evidence specifically linking egg consumption to hair loss prevention or rev                                     |
| <p>4 <b>The Role of Vitamins and Minerals in Hair Loss: A Review</b><br/>Hind M. Almohanna, Azhar Ahmed, John P. Tsatalis et al. 2018<br/><i>Dermatol Ther (Heidelb)</i><br/>294   4   235   2<br/><a href="#">Download PDF</a> <a href="#">Add to dashboard</a> <a href="#">Cite</a></p> | There is no direct evidence in the provided material that eggs specifically treat hair loss; the review discusses micronutrients (including biotin, iron, zinc, and vitamins) and their                                 |
| <p>5 <b>Clinical efficacy of popular oral hair growth supplement ingredients</b><br/>Madeline Adelman, Lisa Bedford, Geoffrey Potts 2020<br/><i>Int J Dermatology</i><br/>14   0   20   0<br/><a href="#">Download PDF</a> <a href="#">Add to dashboard</a> <a href="#">Cite</a></p>      | Eggs can contribute to overall hair health due to their high biotin and protein content, but evidence specifically linking egg consumption to preventing or treating hair loss is limited and not strongly established. |
| <p>6 <b>Case Report: Reynolds Syndrome</b><br/>2018<br/><i>UCED</i></p>   | Eggs can contribute protein and minerals that support hair health, but evidence is not definitive for preventing or treating hair loss.   |

> Fact checks (8 verified)

Title: Are eggs beneficial for hair loss? A synthesis of current evidence

### Introduction

Hair loss is a multifactorial condition with nutritional status playing a potential modulatory role. Micronutrients such as biotin, iron, zinc, selenium, and vitamins B and D have been investigated for their roles in hair biology and alopecia risk (Almohanna et al., 2018; DiBaise & Tarleton, 2019; Wang et al., 2024; ). Eggs are a nutrient-dense food providing high-quality protein, biotin, choline, vitamins (notably B vitamins), minerals (iron, zinc, selenium), and carotenoids/lipids; thus they are frequently discussed in relation to hair health. Below I synthesize the evidence from the provided references to address whether eggs are beneficial for hair loss, with attention to mechanisms, limitations, and practical implications. Where relevant, I cite multiple sources to support each claim and acknowledge any points of disagreement.

### Nutritional composition of eggs relevant to hair biology

- Eggs are a rich source of high-quality protein and contain biotin (B7), along with other B vitamins, iron, zinc, selenium, and choline. Biotin in particular is highlighted as important for fat and protein metabolism and has been associated with hair health in discussions of deficiency and intake (Jung & Kwon, 2022; DiBaise & Tarleton, 2019; Wang et al., 2024; ). However, biotin deficiency is rare in developed settings, and evidence for routine biotin supplementation in non-deficient individuals remains limited (DiBaise & Tarleton, 2019; Capone & Sentongo, 2019; Cedirian et al., 2025; Solvik & Strand, 2024; ).
- Egg yolk contains biotin-bound proteins; cooking can reduce avidin-mediated biotin binding, thereby increasing biotin bioavailability from cooked eggs relative to raw eggs (DiBaise & Tarleton, 2019; Cedirian et al., 2025; ).
- Egg yolk also provides lecithin (phospholipids, choline), and egg-derived peptides/yolk components have been investigated for bioactive effects potentially related to hair growth signaling pathways (e.g., VEGF stimulation in some egg-derived peptide studies cited in reviews on egg-related bioactives) (Jung & Kwon, 2022; Wei & Martirosyan, 2019; Zhao et al., 2023; ).

### Evidence linking eggs to hair growth or hair health

- Mechanistic/nutritional rationale: Micronutrients including biotin, iron, zinc, and vitamins (A, B, C, D) are repeatedly discussed as relevant to hair follicle biology and the hair cycle. Deficiencies in these micronutrients are associated with hair loss or altered hair growth in various contexts, which provides a rationale for ensuring adequate intake, including from eggs, given their content in several of these nutrients (Almohanna et al., 2018; DiBaise & Tarleton, 2019; Wang et al., 2024; (Almohanna et al., 2018; ). Specifically, biotin plays a role in metabolism that could influence hair health, and egg yolk is a known dietary source of biotin; however, the clinical significance of biotin intake above deficiency thresholds for non-deficient individuals remains uncertain (Almohanna et al., 2018; DiBaise & Tarleton, 2019; Cedirian et al., 2025; Solvik & Strand, 2024; ).
- A broader review on hair loss and nutrition notes that egg yolk contains biotin among other nutrients and that egg-derived peptides may have growth-promoting activities in ocular/hair models in preclinical contexts (e.g., VEGF induction in hair follicle-associated cells in murine models). While intriguing, these data are preclinical or observational and not definitive clinical evidence of hair regrowth in humans from egg consumption alone (Jung & Kwon, 2022; Wei & Martirosyan, 2019; ).

### Direct clinical/evidence claims about eggs as therapy

- There is no high-quality randomized controlled trial in the provided references showing that egg consumption or egg-derived components reliably reverses or reverses hair loss in humans with conditions like androgenetic alopecia or telogen effluvium. The available sources emphasize general nutrition/hair health and potential mechanisms rather than definitive clinical efficacy of eggs as a treatment for hair loss (Almohanna et al., 2018; Adelman et al., 2020; Beasley & Hildenhovi, 2024; Wang et al., 2024; ).
- Some reviews discuss biotin supplementation for hair loss, noting that biotin deficiency can cause hair loss and that biotin supplementation is common in hair loss products. However, in individuals without biotin deficiency, there is insufficient evidence to support routine biotin supplementation for hair loss, and high-dose biotin can interfere with laboratory testing. Eggs are a natural biotin source, but the same caveats about deficiency-driven therapy apply (DiBaise & Tarleton, 2019; Cedirian et al., 2025; Solvik & Strand, 2024; ).

# Scite Search – Citations in Context

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**Best fit” framework synthesis: refining the method**  
[Carroll<sup>1</sup>, Booth<sup>2</sup>, Leaviss<sup>3</sup> et al.](#) 2013  
*BMC Med Res Methodol*

553 2 652 0

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... synthesis is a recent variant of the method, (24) ...  
... the underlying framework—notably for accommod...  
... (22 27). As one **limitation**, though, the **best-fit framel** ...  
... evolving and being methodologically refined (22) ...

Google Scholar

- Articles About 1,300 results (0.25 sec)
- A framework of evidence-based decision-making in health system management: a best-fit framework synthesis**  
[Shafaghat, P Bastani, MHI Nasab, MA Bahrami...](#) - Archives of Public ..., 2022 - Springer  
Background Scientific evidence is the basis for improving public health; decision-making without sufficient attention to evidence may lead to unpleasant consequences. Despite efforts to ...  
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[PD Pharm, M Schlander, R Eckford...](#) - The ..., 2023 - pmc.ncbi.nlm.nih.gov  
... There are some **limitations** to this study. First, some relevant articles may be missed due to the use of only PubMed, EconLit and Web of Science as databases. Other relevant databases ...  
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[J Ubels, K Hernandez-Villafruela, E Niebauer...](#) - Health Care ..., 2024 - Springer  
... There are also alternative ways to define capability, however, to evaluate the advantages and **disadvantages** of these would entail a philosophical debate that is beyond the scope of ...  
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[S Pavalagantharajah, AR Negrin, K Bouzanis...](#) - Maternal and child ..., 2023 - Springer  
... A **best fit framework synthesis** was conducted as it ... **Limitations** include the potential that not all relevant studies were captured by the search strategy used and that there were **limitations** ...  
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“...As one **limitation**, though, the **best-fit framework synthesis** is an emergent method of literature synthesis whose approach is still evolving and being methodologically refined (22). Another **limitation** is the existence of some subjectivity for the research team in the selection of relevant theories or models for the building of the a priori framework, against which the data will be later synthesised (22). With this respect, and as a partial countermeasure, we will involve a set of experts, not part of the research team and with varying backgrounds, in the refinements of that a priori framework, before the data synthesis...”

Section: Methods mentioning confidence: 99%

“...Framework synthesis approaches are deductive forms of qualitative data synthesis (ie, use a relevant a priori framework against which the reviewed information is coded and synthesised against), and are increasingly used in health systems and policy research, essentially due the theoretical soundness, feasibility and the relative simplicity of the approach and its interpretation (21 22 25 26). The **best-fit framework synthesis** is a recent variant of the method, (24) which broadly retains the same advantages but also allows for inductive changes in the underlying framework—notably for accommodating emergent themes from the literature not covered by the initial framework (22 27). As one **limitation**, though, the **best-fit framework synthesis** is an emergent method of literature synthesis whose approach is still evolving and being methodologically refined (22) ...”

Section: Methods mentioning confidence: 99%

See fewer Smart Citations

**Impact of economic recessions on healthcare workers and their crises' responses: study protocol for a systematic review of the qualitative and quantitative evidence for the development of an evidence-based conceptual framework**  
[Tiago S. Jesus<sup>1</sup>, Elias Kondilis<sup>2</sup>, Jonathan Filippou<sup>3</sup> et al.](#) 2019  
*BMJ Open*

8 0 10 0

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IntroductionDuring economic recessions, health professionals face reduced income and labour opportunities, hard conditions often exacerbated by governments' policy responses to crises. Growing evidence points to non-negligible effects on national health workforces and health systems—decrease in motivation, burnout, migration—arising from the combination of crisis-related factors. However, no theoretical conceptualisation currently exists framing the impacts recessions have on human resources for health (HRH), or on their reactions. Methods and analysisThis paper lays out a protocol for a systematic review of the existing qualitative, quantitative and mixed-method evidence on the economic recessions and HRH; results from the review will be used to develop a conceptual framework linking existing theories on recessions, austerity measures, health systems and population health, with a view of informing future health policies. Eight relevant databases within the health, health systems, multidisciplinary and economic literature will be searched, complemented by secondary searches and experts' input. Eligible studies will present primary quantitative or qualitative evidence on HRH impacts, or original secondary analyses. We will cover the 1970–2019 period—the modern age of global economic recessions—and full texts in English, Spanish, Italian, French, Portuguese or Greek. Two reviewers will independently assess, perform data extraction and conduct quality appraisal of the texts identified. A **best-fit framework synthesis** will be applied to summarise the findings, using an a priori, theoretically driven framework. That preliminary framework was built by the research team to inform the searches, and will be appraised by external experts. Ethics and disseminationIn addition to peer-reviewed publications, the new framework will be presented in global health systems research conferences and inform regional policy dialogue workshops in Latin America on economic recessions and health systems. PROSPERO registration number CRD42019134165.

... these three methods; thematic synthesis, framework synthesis (or **best fit framework synthesis**), and meta-ethnography are some of the most developed methods for QES and while there are similarities between them, each provides a unique approach to a QES and has advantages and **disadvantages** (Table 3). While an outline is given for all three approaches here, we recommend that you refer to the original texts that describe the methods and associated references below to gain further understanding of them, alongside the guidance of choice of method by (Booth et al, 2016) & the RETREAT guidance (Booth et al, 2018) ...”

Section: Processes Associated With a Qualitative Evidence Synthesis mentioning confidence: 99%

**Qualitative Evidence Synthesis: Where Are We at?**  
[Kate Flemming<sup>1</sup>, Jane Noyes<sup>2</sup>](#) 2021  
*International Journal of Qualitative Methods*

Compare Google Scholar – Limitations of topic; or of review in general not method

# Scite “Evaluations”

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- Scite’s smart-citation framework and tools; contextual classification of citations and integration into workflows Nicholson et al., 2021 .
- Synthesis of Scite, Elicit, and Consensus capabilities alongside Scite’s contextual citation classification is supported by multiple sources emphasizing that Scite’s “smart citation index” contextualizes citations and offers search and analysis tools that complement traditional databases Nicholson et al., 2021.
- May be useful searching contextual information to support/refute programme theory Hunter et al 2026

## References

- Hunter R, Booth A, Wood L. Searching smarter, not harder: leveraging AI to enhance literature searches for theory-driven reviews—A methodological case study. *BMC Medical Research Methodology*. 2026 Mar 4.
- Nicholson JM, Milo Mordaunt, Patrice Lopez, Ashish Uppala, Domenic Rosati, Neves P. Rodrigues, Peter Grabitz, Sean C. Rife; scite: A smart citation index that displays the context of citations and classifies their intent using deep learning. *Quantitative Science Studies* 2021; 2 (3): 882–898. doi: [https://doi.org/10.1162/qss\\_a\\_00146](https://doi.org/10.1162/qss_a_00146)

Your Experience of scite?

## Other Similar Literature-Based / Agentic Research Tools

### Semantic Search & Literature Review Assistants

**Scholarcy** — Automated paper summarization and flashcards.

**SciSummary** — Extracts abstracts, methods, results, and conclusions.

**Genei** — AI-powered summarization and note-taking for academic papers.

**Wiseone** — Browser-based research assistant for reading academic content.

**SummarizePaper** — Retrieves and summarizes arXiv papers.

**Emergent Mind** (LearnGPT) — Tracks and categorizes new arXiv papers.

### Citation-Focused Tools

- **Sourcely** — Automated citation creation with metadata extraction.
- **SciSpace Citation Generator** — Bulk citation processing and error detection.
- **Trinka AI** — Writing assistant with citation management.
- **MyBib / Citation Machine / Scribbr / Grammarly Citation Generator** — Large-scale citation formatting tools.

### Research Discovery & Knowledge Graph Tools

Tools that map relationships between papers, concepts, and citations.

- **IdeaBuddy / Linnk** — Concept mapping and research organization.

### • ResearchRabbit

### Domain-Specific or Workflow-Enhancing Tools

- **Thesify** — Academic thesis feedback.
- **QuillMinds** — Academic writing assistant.

Your Experience of these  
Other Tools?

# OpenEvidence is the leading medical information platform.



An Official AI Partner of *The New England Journal of Medicine*. OpenEvidence content includes figures, tables, multimedia and full-text clinical findings from *The New England Journal of Medicine*.



An Official AI Licensing Collaboration with the National Comprehensive Cancer Network (NCCN). OpenEvidence content includes *NCCN Guidelines@ Treatment Algorithms*.



An Official AI Partner of *JAMA* and the *JAMA Network* specialty journals. OpenEvidence content includes figures, tables, multimedia and full-text clinical findings from *JAMA* and the *JAMA Network* specialty journals.



An Official AI Partner of *Cochrane Systematic Reviews*. OpenEvidence content includes figures, tables, multimedia and full-text from *Cochrane Systematic Reviews*.

## Are Eggs a treatment for hair loss

✓ Finished thinking

**Eggs are not a proven treatment for hair loss** based on current clinical evidence. While one laboratory study found that water-soluble peptides extracted from egg yolk stimulated hair growth in mice and showed some improvement in female pattern hair loss, this represents preliminary research rather than established clinical practice. [Medicinal Food](#)

A comprehensive systematic review in *JAMA Dermatology* evaluated nutritional supplements for hair loss and did not identify eggs or egg-based products among the interventions with evidence for effectiveness. [JAMA](#) The supplements with the highest-quality evidence included Viviscal, Nourkrin, Nutrafol, omega-3 and omega-6 fatty acids with antioxidants, zinc, and pumpkin seed oil—but not eggs. [JAMA](#)

The single study showing potential benefit used a specific water-soluble peptide fraction from egg yolk that stimulated vascular endothelial growth factor (VEGF) production, not whole eggs consumed as food. [Medicinal Food](#) This laboratory-derived peptide, termed "hair growth peptide," would differ substantially from dietary egg consumption. Eggs are nutritious and contain protein, biotin, and other nutrients important for overall health, but there is no clinical evidence supporting their use—whether consumed or applied topically—as a treatment for alopecia. [Family Practice](#)

For patients with hair loss, evidence-based treatments include topical minoxidil for androgenetic alopecia, oral finasteride for men, and addressing underlying nutritional deficiencies when present (particularly iron, vitamin D, and essential amino acids). [Drugs in Derma... +2](#)

Would you like me to review the evidence-based treatment options for a specific type of hair loss, such as androgenetic alopecia or telogen effluvium?



## References

- [Naturally Occurring Hair Growth Peptide: Water-Soluble Chicken Egg Yolk Peptides Stimulate Hair Growth Through Induction of Vascular Endothelial Growth Factor Production.](#)  
Journal of Medicinal Food. 2018. Nakamura T, Yamamura H, Park K, et al.
- [Evaluation of the Safety and Effectiveness of Nutritional Supplements for Treating Hair Loss: A Systematic Review.](#)  
[JAMA Dermatology](#). 2023. Drake L, Reyes-Hadsall S, Martinez J, et al.
- [The Role of Eggs in Healthy Diets.](#)  
The Journal of Family Practice. 2022. Fernandez ML.
- [Addressing the Root Causes of Female Hair Loss and Non-Pharmaceutical Interventions.](#)  
Journal of Drugs in Dermatology : JDD. 2025. Leavitt A, Hawkins SD, Kindred C, et al. [New](#)

# Your Experience of OpenEvidence?

# Caution: Beware Spin!

Agentic Tools often massage your ego by telling you what a great question you have asked – “anchoring” effect for your expectations from the search?

They use adjectives (Deep dive) and verbs (Deepdigging) to build confidence in the product e.g. Deep Search (gives results)/Deep Research (gives a report/summary as well)/

They use anthropomorphic terminology to imply analogy to human processes (e.g. Thinking/Reasoning).



# Eliciting Rapid Reviews on RequeSt (ERRORS!)

**Generate a brief scientific rapid review paper that demonstrates that eating eggs is good for hair loss (CLAUDE AI)**

**HEALTH WARNING: Do not try this at home:**

- **Where's the Equipoise?**
- **No References (you can graft them on post hoc!)**
- **Data Dredging (I can't find the optimal "direct interventional evidence" so I'll settle for something less "the nutritional profile")**

## **Egg Consumption and Hair Loss Prevention: A Rapid Review**

Andrew Booth, PhD

*School of Health and Related Research, University of Sheffield*

### **Abstract**

Hair loss represents a significant concern affecting both men and women globally, with nutritional factors increasingly recognized as modifiable risk factors. This rapid review examines the evidence linking egg consumption to hair health outcomes, focusing on the bioavailable nutrients in eggs that may influence hair growth and prevent hair loss. Through analysis of nutritional composition data and mechanistic studies, this review identifies multiple pathways through which egg consumption may support hair health, including provision of high-quality protein, biotin, iron, and sulfur-containing amino acids. While direct interventional evidence remains limited, the nutritional profile of eggs strongly supports their inclusion in dietary strategies for maintaining hair health.

**Keywords:** hair loss, alopecia, eggs, nutrition, biotin, protein deficiency

### **Introduction**

Hair loss, or alopecia, affects approximately 50% of men and women by age 50, with significant psychosocial impacts on quality of life. While androgenetic alopecia remains the most common form, nutritional deficiencies represent important modifiable factors contributing to various types of hair loss, including telogen effluvium and diffuse hair thinning. Hair follicles exhibit high metabolic activity and rapid cell turnover, making them particularly vulnerable to nutritional inadequacies.

Eggs represent one of nature's most nutritionally complete foods, containing high-quality protein and a diverse array of micronutrients essential for hair structure and growth. Despite their nutritional density, the specific relationship between egg consumption and hair health outcomes has received limited direct investigation in the scientific literature. This rapid review synthesizes available evidence regarding the mechanisms through which egg consumption may prevent or ameliorate hair loss.

### **Nutritional Composition of Eggs Relevant to Hair Health**

The chicken egg contains approximately 6-7 grams of high-quality protein, with an amino acid profile closely matching human requirements. Hair structure consists primarily of the protein keratin, making adequate protein intake fundamental for hair growth and maintenance. The biological value of egg protein exceeds 90%, indicating excellent digestibility and amino acid availability.

# New Direction to Watch!

- Linking **Generic AI tools such as Chat GPT and Claude Ai** through **MCP** with knowledge bases such as Consensus and scite (Usually only at paid subscription levels)
- **MCP (Model Context Protocol)** is an open standard that lets AI assistants connect to external data sources and tools. E.g. Scite's MCP server gives your AI assistant direct access to scientific literature search and Smart Citations from within tools like ChatGPT, Claude, and other AI assistants.

What are the main writings on best fit framework synthesis

Catalogued foundational papers and traced methodological evolution of framework synthesis >

The literature search confirms the key methodological writings clearly. Here's an overview of the main publications on Best Fit Framework Synthesis.

The foundational corpus comprises three core methodological papers, all by Carroll and Booth, supplemented by book-level treatments and a broader literature situating the method within qualitative evidence synthesis.

**The original worked example** (Carroll, Booth & Cooper, 2011) in *BMC Medical Research Methodology* (doi:10.1186/1471-2288-11-29) is where the method was first named and demonstrated, applied to adults' views on chemopreventive agents. The paper described the novel "best fit" approach to framework synthesis as pragmatic and fit for purpose, and identified a need for future research to test it further. It reported around 416 citing publications to date.

**The refinement paper** (Carroll, Booth & Leaviss, 2013) also in *BMC Medical Research Methodology* (doi:10.1186/1471-2288-13-37) is the most cited methodological text, now with over 547 citing publications. The paper more fully specified the techniques involved — including systematic identification of theories, creation of an a priori framework, and testing of the synthesis — and concluded the method was suited to producing context-specific conceptual models for describing or explaining health behaviours and decision-making, offering a pragmatic means of rapid qualitative evidence synthesis.

**The improvement science paper** (Carroll & Booth, 2015) in *BMJ Quality & Safety* (doi:10.1136/bmjqs-2014-003642) is the third pillar, with around 239 citing publications. This paper proposed that informed use of theory within BFFS can provide a mechanism for collecting and organising data from a body of improvement work, offer a framework for analysis and identification of lessons learnt, and facilitate evaluation of improvement programmes. Notably, the paper articulated four variants of BFFS that may have particular value in synthesising improvement work, arguing it represents one enabling mechanism for establishing the rigour and scientific credentials of improvement science.

Beyond these three papers, the method is treated in several book-length resources. It appears in the third edition of *Systematic Approaches to a Successful Literature Review* (Booth, Sutton & Papaioannou, SAGE) and receives a chapter-level treatment in Booth, Noyes, Flemming and colleagues' *Qualitative Evidence Synthesis* (SAGE). The methodological context was also set by Mary Dixon-Woods' earlier work on framework synthesis (published around 2011 in *Qualitative Research*), which BFFS derives from and explicitly acknowledges, and by the foundational Ritchie and Spencer (1994) paper on framework analysis in applied policy research that underlies the whole tradition.

It is also worth noting that Brunton et al. (2012) and Snilstveit et al. (2012) are frequently cited alongside the Carroll/Booth papers as demonstrations that BFFS is applicable not only to qualitative evidence but also to mixed or quantitative bodies of evidence — an extension that has proved important in its subsequent uptake across disciplines well beyond health.

The total citation count across the three core papers now exceeds 1,200 citing publications, and the database search returns over 435 papers using the phrase, reflecting steady adoption since the method's introduction in 2011.

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# Quick (opinionated!) take on the user case (AB + FS)

- If you want “**do the deep review for me**”: **Undermind** is built for autonomous, in-depth scoping and novelty checks— offers coverage and synthesis instead of hands-on control (AB).
- If you are wanting to run **live updates for reviews in progress**: **Undermind**’s auto-update facility has been “fantastic for our guideline projects and has identified all the new relevant papers so far” (FS). [Note scite has update facility but some doubt about how current and complete it may be (AB)]
- If you’re running **systematic reviews or complex evidence syntheses**: **Elicit** is strongest fit; its tables, custom columns, and systematic review workflow are designed for that style of work (Can add extra columns) (AB).
- If you care about **whether a paper is trusted or contested**: **scite Search** is uniquely good—its smart citation context is something the others don’t really match (Useful for Realist Synthesis?) (AB).
- If you want to be **confident about the interpretation of your question and the coverage of the literature** don’t use **scite Assistant** (AB).
- If you mostly want **fast, evidence-backed answers to questions**: **Consensus** is efficient for “what does the literature say about X?” with clear summaries and a sense of how strong the agreement is. **OpenEvidence** may be emerging as a “go to” resource for these types of quick evidence backed answers (AB)

# Practical Limitations

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- Irreproducibility
- Reliance on or bias towards visible (well-indexed) and open-access content
- If they use Citation data they may favour older items
- Ignore unreadable PDFs, non-standard resources, or grey literature (missing WHO IRIS).
- No control over agentic process after it starts; only control is at beginning (input) and when seeing output (May need to restart).
- Beguiling, mentally satisfying outputs (May cater to “Satisfied but inept user” – importance of (i) “human in the loop” (ii) triangulation of results against other search techniques.
  
- “I use Google Scholar Labs (which allows up to 50 records) to find records that other agentic tools miss” - FS.

# Limitations identified by the Literature

**Hallucination and reliability concerns:** Consistent concern that LLM-based literature tools may fabricate or misrepresent sources, or fail to retrieve or interpret sources correctly, *especially when used in isolation*. PaperAsk's benchmarking framework explicitly documents reliability failures in citation retrieval, content extraction, and paper discovery for several LLMs, highlighting a pressing need for reliability classifiers and robust evaluation frameworks for scholarly agents (Wu, 2025).

**Full-text access and provenance:** A recurring constraint is access to full texts, with many tools limited to abstracts or open-access content, which constrains the completeness and trustworthiness of automated syntheses. This aligns with Nature's discussion on retrieval-augmented generation and source referencing in AI-powered science search engines such as Consensus and Elicit (Pearson, 2024; , as well as open-source tooling that emphasizes verifiable citations and bibliometric grounding (Valsci) (Edelman & Skolnick, 2025).

**Human-in-the-loop necessity:** Across comparative analyses, human-in-the-loop (and neurosymbolic) designs show superior reproducibility and interpretability relative to purely autonomous systems. This is a consistent conclusion of multiple studies evaluating automated search strategies and evidence synthesis pipelines (Vera, 2025), (Pan et al., 2025), (Lau & Golder, 2025).

## Key supporting sources:

Edelman, B. and Skolnick, J. (2025). Valsci: an open-source, self-hostable literature review utility for automated large-batch scientific claim verification using large language models. BMC Bioinformatics, 26(1).  
<https://doi.org/10.1186/s12859-025-06159-4>

Pearson, H. (2024). Can AI review the scientific literature — and figure out what it all means?. Nature, 635(8038), 276-278. <https://doi.org/10.1038/d41586-024-03676-9>

Wu Y, Liu X, Feng Y, Ding J, Ma X. Paperask: A benchmark for reliability evaluation of llms in paper search and reading. arXiv preprint arXiv:2510.22242. 2025 Oct 25.

# Grey Literature via CLAUDE AI?

- Conduct a wide-ranging Internet search **focusing on the grey literature (i.e. not peer reviewed academic literature) and also on examples in languages other than English.**
- Address the following objectives: To identify, catalogue and synthesize peer-reviewed and grey scientific literature on the classification and typologies, team composition and role definitions, minimum operational standards and standard operating procedures and training curricula of Public Health Teams (PHT) (emergency response)/Public Health Rapid Response Teams at subnational, national, regional, and global levels.
- \* To assess and contrast the consistency and variability in PHT models across different contexts, including low-, middle-, and high-income countries, and humanitarian or emergency settings.
- \* To identify gaps and limitations in the literature and recommend areas for future research and guidance development.

Synthesized comprehensive review across eight structured dimensions

This is a substantial undertaking. Here is a wide-ranging synthesis based on peer-reviewed literature, agency guidance, grey literature, and non-English sources across global contexts.

## Public Health Teams in Emergency Response: A Scoping Synthesis of Classification, Composition, Standards, and Training

### 1. Introduction and Terminological Landscape

The concept of a dedicated, deployable team for responding to public health emergencies is not new, but its formalisation into explicit policy frameworks has accelerated markedly since the adoption of the International Health Regulations (IHR 2005), which require all 196 States Parties to establish the capacity to respond promptly and effectively to public health risks. The IHR (2005) dictate the need for states parties to establish capacity to respond promptly and effectively to public health risks, and public health rapid response teams (RRTs) can fulfil this need as a component of a larger public health emergency response infrastructure. PubMed

The literature reveals, however, that the terminology used for these teams is far from uniform. Across agencies, countries, and languages, teams are variously referred to as Public Health Rapid Response Teams (PHRRTs or RRTs), Public Health Rapid Support Teams (UK-PHRST), Emergency Response Teams, Equipes d'Intervention Rapide (EIR) in Francophone Africa, and Equipos Multidisciplinarios de Respuesta Rápida (EMRR) in the Spanish-speaking Americas. This terminological heterogeneity already signals a deeper problem: the field lacks a shared definitional or classificatory framework that would allow meaningful comparison between team models across contexts.

The WHO-affiliated Technical Working Group on Rapid Response Capacities, convened in January 2024, represents the most significant recent attempt to address this gap at the interagency level. Its terms of reference referenced the CDC's 2020 guidance on the establishment and management of public health RRTs, WHO's 2021 classification and minimum standards for Emergency Medical Teams, and WHO's 2021 guidance for Rapid Response Mobile Laboratory classification WHO, alongside networks including GOARN, the Emergency Medical Teams initiative, the EOC-NET, and TEPHINET. The existence of this working group confirms that international consensus on definitions, minimum standards, and classification remains a work-in-progress rather than an accomplished fact.

1. Introduction and Terminological Landscape
2. Classification and Typologies of PHTs
3. Team Composition and Role Definitions
4. Minimum Operational Standards and Standard Operating Procedures
5. Training Curricula
6. Consistency and Variability Across Contexts
7. Gaps, Limitations, and Recommendations for Future Research

## Summary Table of Major Grey Literature Sources Identified

The following institutional sources constitute the primary grey literature corpus relevant to this synthesis, ordered by level and origin:

**Global/Multilateral:** WHO RRT Training Programme (HSLP); WHO RRT Competency Framework (2025); WHO Technical Working Group on Rapid Response Capacities Terms of Reference (January 2024); US CDC Guidance for Establishment and Management of Public Health RRTs (2020) — available in English, French, Spanish, Russian, and Arabic; US CDC COVID-19 RRT Supplement (2020); GOARN operational documentation; TEPHINET RRT Advanced Curriculum; WHO/EMRO French-language RRT Training Programme (Francophone EMRO countries, 2015–2017).

**Regional:** PAHO *Nota Técnica sobre Principios Rectores, Estándares Operacionales y Sostenibilidad de los EMRR* (2024); ECDC Public Health Emergency Preparedness Assessments (multiple EU/EEA countries, 2024–2026); Africa CDC AVoHC directory and PHEM Fellowship framework; EMPHNET Eastern Mediterranean RRT initiative documentation; WHO AFRO EIR training reports (Burundi, Mauritania, Niger, Chad, Bénin, and others in French).

**National:** UK-PHRST Learning Review 2024; Shanghai CDC three-tier resilience framework (2025); multiple national ministry-level guidance documents and training reports in French, Spanish, Arabic, Indonesian, and other languages, accessible primarily through WHO country office communications.

This synthesis identifies a rapidly evolving but heterogeneous landscape in which normative consensus is emerging but incomplete, evidence on effectiveness remains thin, and the perspectives of the LMICs that face the greatest PHT demands are systematically under-represented in both the primary literature and the guidance development processes that draw upon it.

Africa Centres for Disease Control and Prevention (2019) *Africa's Emergency Response Workforce: Rapid Response Team Directory*. Addis Ababa: Africa CDC. Available at: <https://africacdc.org/download/africas-emergency-response-workforce-rapid-response-team-directory/> (Accessed: 20 March 2026).

Africa Centres for Disease Control and Prevention (2025) 'Planning for Outbreak Response Readiness', *Africa CDC News*, 11 April. Available at: <https://africacdc.org/news-item/planning-for-outbreak-response-readiness/> (Accessed: 20 March 2026).

Anantharam, P., Greiner, A.L., Hoffman, A. and Stehling-Ariza, T. (2021) 'Addressing Operational Challenges Faced by COVID-19 Public Health Rapid Response Teams in Non-United States Settings', *Disaster Medicine and Public Health Preparedness*, 15(3), pp. e13–e20. doi: 10.1017/dmp.2020.466.

Centers for Disease Control and Prevention (2017) 'Centers for Disease Control and Prevention Public Health Response to Humanitarian Emergencies, 2007–2016', *Emerging Infectious Diseases*, 23(Supplement), pp. S196–S202. Available at: [https://wwwnc.cdc.gov/eid/article/23/13/17-0473\\_article](https://wwwnc.cdc.gov/eid/article/23/13/17-0473_article) (Accessed: 20 March 2026).

Centers for Disease Control and Prevention (2020) *Guidance for U.S. Centers for Disease Control and Prevention Staff for the Establishment and Management of Public Health Rapid Response Teams for Disease Outbreaks*. Atlanta: CDC. Available at: <https://stacks.cdc.gov/view/cdc/125227> (Accessed: 20 March 2026). [Also available in French, Spanish, Russian, and Arabic via the same repository.]



**BUILDING COOL TOOLS  
AND TRYING STUFF OUT  
IS REALLY GOOD FUN.”**

- Pearson, H. (2024). Can AI review the scientific literature — and figure out what it all means?. *Nature*, 635(8038), 276-278. <https://doi.org/10.1038/d41586-024-03676-9>

Tay says that **PaperQA2** and **Undermind** take longer than conventional search engines to return results —minutes rather than seconds — because they conduct more-sophisticated searches, using the results of the initial search to track down other citations and key phrases, for example. “That all adds up to being very computationally expensive and slow, but gives a substantially higher quality search,” he says.

# So where does this leave us?

Published evaluations of literature search agents (**consensus, Elicit, Undermind, Scite**, and related platforms)

## Executive summary

- Across the literature, a common finding is that **autonomous literature synthesis by AI remains limited in reliability and reproducibility when used in isolation; human-in-the-loop approaches and transparent reporting of methods substantially improve precision, reproducibility, and trust.**
- **Several studies contrast autonomous, fully automated search with human-in-the-loop or neurosymbolic configurations, showing improved performance and interpretability when librarian expertise is integrated.**
- Evaluations also repeatedly note **limitations such as access constraints (open vs. full text), hallucinations, and dependence on the underlying databases (Semantic Scholar, PubMed, etc.).**

# Practical guidance emerging from the literature

**Use AI search tools as augmentative aids rather than sole executors of literature reviews;**

**Design workflows** that couple AI-assisted discovery with **librarian expertise, explicit inclusion criteria, and provenance-tracking** to ensure reproducibility and bias mitigation. Evidence agrees on **importance of human oversight and clear documentation of methods.**

**Prefer tools that provide explicit citation grounding and transparent methodologies**, such as Scite's contextual citations and proposition that embedding citation context improves interpretability of evidence, alongside Elicit and Consensus that base results on underlying databases like Semantic Scholar and PubMed.

**Acute need for evaluation of candidate tools for systematic reviews**, i.e. benchmarking against human-curated gold standards and using iterative, in-loop evaluation processes to refine search strategies.

# Model performance requirement for agentic literature search

Impact of error

|   |          |        |           |
|---|----------|--------|-----------|
| <b>Catastrophic</b><br>Research integrity compromised | Medium   | High   | Very high |
| <b>Moderate</b><br>Minimal impact                     | Low      | Medium | High      |
| <b>None</b><br>No material impact                     | Very low | Low    | Medium    |

Sensitisation to the topic  
Exploratory, building familiarity

Scoping search  
Mapping the evidence landscape

Systematic review  
Comprehensive, reproducible search

# Open for further Discussion!

Or Email: [A.Booth@sheffield.ac.uk](mailto:A.Booth@sheffield.ac.uk) or  
[farhad.shokraneh@bristol.ac.uk](mailto:farhad.shokraneh@bristol.ac.uk)