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# Effectiveness of educational interventions on information literacy in healthcare professionals

## A systematic review

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# Background

- Pre-appraised sources of evidence, such as UpToDate®, with clear recommendations on the quality of evidence and its applications in clinical practice, are becoming increasingly common and are helpful resources for busy clinicians.
- While EBM's third and fourth steps might no longer be as important with pre-appraised sources of evidence, information literacy, i.e., the ability to formulate a clinical question and develop a relevant search strategy, is still essential.
- It is unclear which educational interventions effectively improve healthcare professionals' information literacy.



# Aims

- This review aims to complement existing literature by assessing the effectiveness of educational interventions for improving information literacy exclusively in healthcare professionals.
- More specifically, this is a systematic review of educational interventions to improve healthcare professionals' ability to carry out the first two steps of EBM, namely, formulate answerable clinical questions and find evidence.



# Methods

- This review was conducted according to the Cochrane methodology and reported according to the PRISMA statement.
- The following databases from inception to November 2022, MEDLINE, Cochrane CENTRAL, EMBASE, Web of Science, CINAHL, and Google Scholar, were searched.
- Randomised controlled trials and crossover trials on any educational interventions were included. Studies on search tools that are obsolete were excluded.



# Methods

- Primary outcomes
  1. Participants' post-intervention knowledge
  2. Participants' post-intervention skills:
    - Search duration, search recall, search precision, number of successful searches, and number of questions.
  3. Participants' post-intervention attitude
  4. Participants' post-intervention satisfaction



# Methods

- Secondary outcomes
  1. Post-intervention behaviour change
  2. Patient-related outcomes
  3. Cost and cost-effectiveness of implementing the educational interventions
  4. Adverse effects of the educational intervention

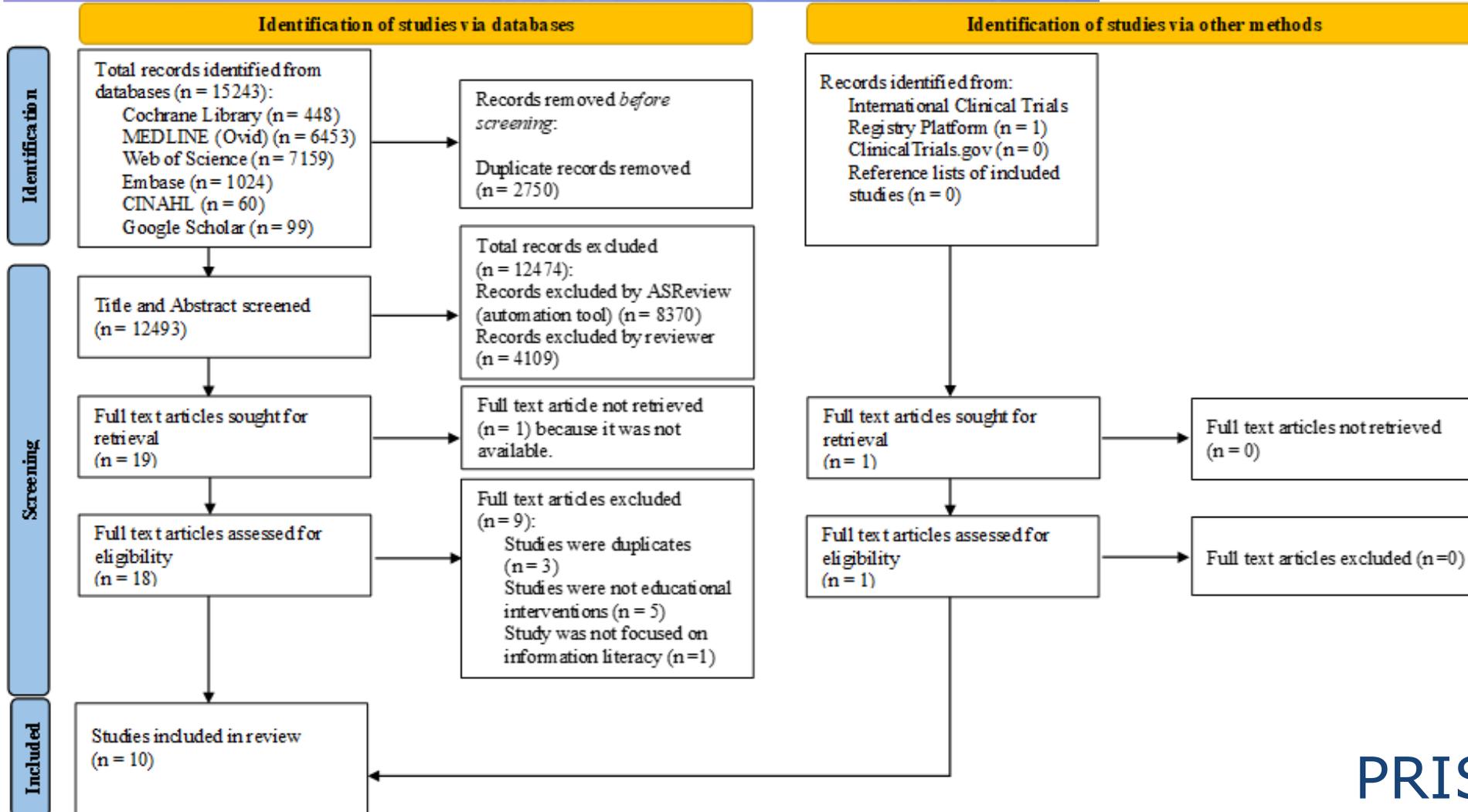


# Methods

The information extracted included the following:

- Study design and participants' demographics, type of educational intervention, the method used to deliver the intervention, i.e., precisely what was delivered, who delivered it, how it was delivered, where it was delivered, how much was delivered, and whether the intervention was generalisable.
- Characteristics of interventions were grouped into delivery platforms, such as online, face-to-face, and both, and delivery format (lecture, workshops, small groups, computer-assisted, self-directed, lessons learned in the pandemic era and future challenges, 10th International Conference for EBHC Teachers and Developers, 9th Conference of the International Society for Health Education, Taormina, 25-27 October 2023, #EBHC2023, EBM, and bedside education).

# Results



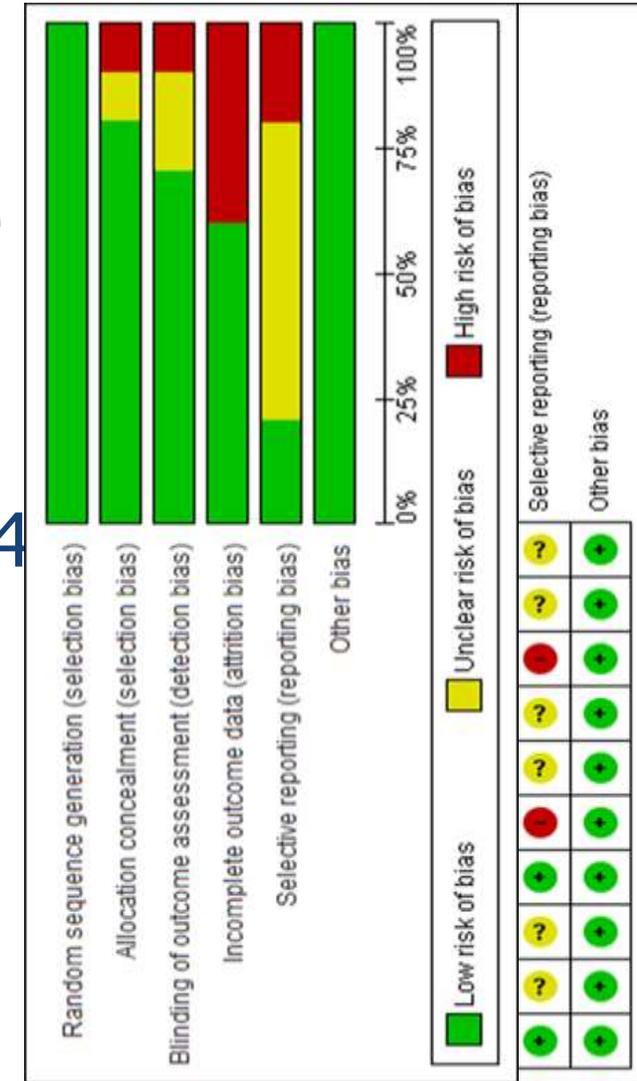
PRISMA flow diagram

# Results

- A total of 10 studies (1458 participants) were included in the review.
- Characteristics of included studies
  - All included studies were conducted in high-income countries, five in the USA, and one in Australia, Canada, Hong Kong, The Netherlands, and the United Kingdom.
  - Six studies focused on doctors, and four included mixed populations of doctors, nurses, and other healthcare professionals.
  - A range of educational interventions was evaluated, including active instruction (by librarians, expert searchers, authors and faculties, tutorials, and lectures).

# Results

- Risk of bias graph and summary
- There was some evidence for improved attitude favouring lecture with self-directed learning intervention over lecture, bedside education, and computer-assisted self-directed learning (RR:1.14; 95%CI 1.06-1.23; N=2 studies; 1064 participants; I<sub>2</sub>=0%; moderate certainty evidence).
- The healthcare professionals' post-intervention knowledge, skill, satisfaction, and behaviour change were evaluated.
- There was insufficient data to investigate which educational interventions were associated with the greatest improvements in learning



# Limits

- It was impossible to formally assess the risk of publication bias because of the small number of heterogeneous studies in our review. Therefore, the likelihood of publication bias cannot be ruled out in this case.
- This review could have been constrained by the incomplete data and the absence of studies listed under other terms.



• None of the studies used validated measurement instruments to measure outcomes, making comparing

# Conclusions

- The evaluated interventions did not leverage digital technology in delivering educational interventions or as part of the information literacy intervention.
- The included studies were poorly reported, assessed a limited set of outcomes using non-validated measurement instruments and focused on the search of PubMed and Medline.
- Further research on healthcare professionals' information literacy should entail novel educational tools such as mobile learning and explore the use of pre-appraised sources of evidence.