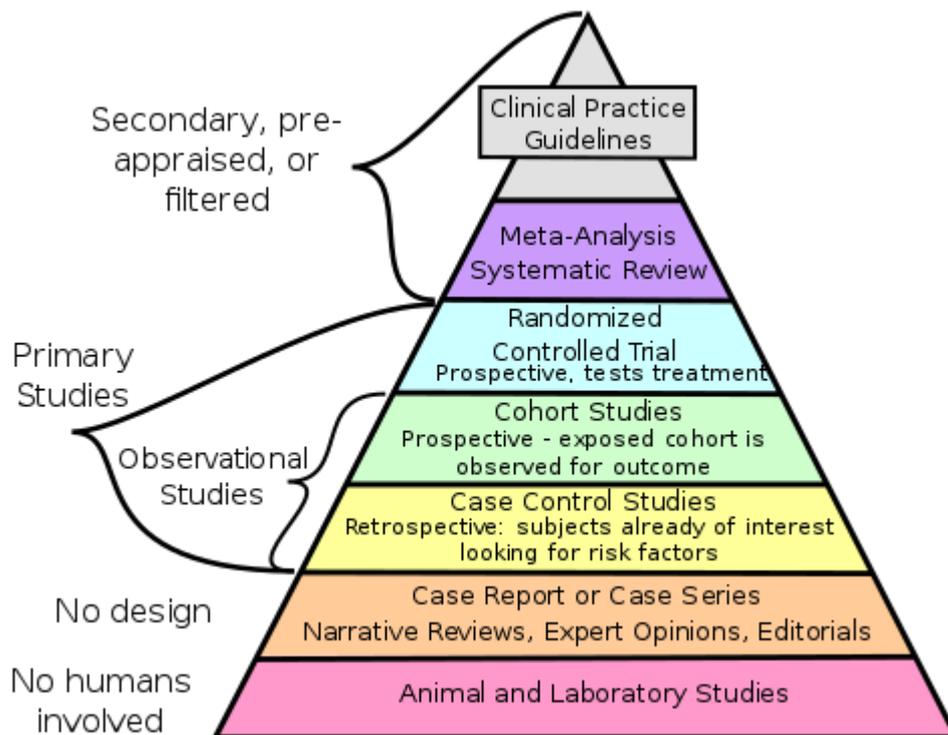


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Guide to study types - literature search web page



When conducting your own research you will come across a range of different study types. This pyramid (also known as the hierarchy of evidence) is a core principle of evidence-based practice and will give you an idea of how to judge what the best available evidence is for your research topic. As

you move up the pyramid, the study designs are more rigorous and allow for less bias or systematic error.

Case series and case reports consist of collections of reports on the treatment of individual patients or a report on a single patient. They are reports of cases and use no control groups to compare outcomes so they have low statistical validity.

Case control studies are studies in which patients who already have a specific condition are compared with people who do not have the condition. The researcher looks back to identify factors or exposures that might be associated with the illness (often relying on medical records and patient recall for data collection). These types of studies are often less reliable than randomised controlled trials and cohort studies because showing a statistical relationship does not mean that one factor necessarily caused the other.

Cohort studies identify a group of patients who are already taking a particular treatment or have an exposure, follow them forward over time, and then compare their outcomes with a similar group that has not been affected by the treatment or exposure being studied. Cohort studies are observational and not as reliable as randomised controlled studies, since the two groups may differ in ways other than in the variable under study.

Randomised controlled clinical trials (RCTs) are carefully planned experiments that introduce a treatment or exposure to study its effect on real patients. They include methodologies that reduce the potential for bias (randomisation and blinding) and that allow for comparison between intervention groups and control (no intervention) groups. A randomised controlled trial is a planned experiment and can provide sound evidence of cause and effect.

Systematic reviews focus on a clinical topic and answer a specific question. An extensive literature search is conducted to identify studies with sound methodology. The studies are reviewed, assessed for quality, and the results summarised according to the predetermined protocol of the review question. However the process of a rigorous systematic review can take years to complete and findings can therefore be superseded by more recent evidence. A large, well conducted RCT may provide more convincing evidence than a systematic review of smaller RCTs. Systematic reviews are not to be confused with **narrative reviews** (often just called reviews) which are opinion with selective illustrations from the literature. Rather than answering a specific clinical question, they provide an overview of the research landscape on a given topic and so maybe useful for background information. Narrative reviews usually lack systematic search protocols or explicit criteria for selecting and appraising evidence and are therefore very prone to bias.

A **meta-analysis** will thoroughly examine a number of valid studies on a topic and mathematically combine the results using accepted statistical methodology to report the results as if it were one large study. Not every systematic review will include a meta-analysis.

The pyramid or hierarchy of evidence is a useful guide or starting point to determine the credibility and validity of clinical research, but remember that different hierarchies exist for different question types, and even experts disagree on the exact rank of information in the hierarchies. See our guide on critically appraising research to find out how to evaluate the evidence you have found.