

Not All Studies Are Created Equal



Experimental Studies
Researchers control the conditions and study the effects. Study participants, which can be people or animals, are often randomly divided into at least two groups: those who get the intervention (i.e. treatment) and those who don't (i.e. placebo). Researchers have more control over variables which is why they're often thought to be more conclusive and reliable.

Strongest

Systematic Review & Meta-Analysis
A systematic review refers to the process of selecting, evaluating, and integrating all available evidence to answer a clearly formulated question. Meta-analysis is the statistical approach to analyze data derived from multiple studies in a systematic review.

Randomized Controlled Trial
Randomly assigns participants into control and experimental groups. As the study is conducted, the only expected difference between the control and experimental groups is the outcome of the variable/ intervention being studied.

Quasi-Experiment
Quasi-experiments aim to establish a cause-and-effect relationship between an independent & dependent variable, but does not rely on random assignment. Instead, subjects are assigned to groups based on non-random criteria.

Weakest

Case Control
A retrospective study helps determine if an exposure is associated with an adverse health outcome (i.e. disease). This study is conducted by grouping people with a specific disease and without the disease to investigate exposure and demonstrate association.

Cross-Sectional Studies
Cross-sectional studies collect data from many different individuals at a single point in time. When researchers wish to examine the occurrence of an outcome at a certain moment in time, a cross-sectional study is the best choice.



It seems that each week a new scientific study makes waves in the media. While the scientific method is inherent within these examinations, **it's important to remember that a single study represents only a single piece of the puzzle.** There are many ways scientists can construct their experiments and interpret their data, and not all studies are created equal.



Let's take a look at different study designs and how those designs affect reliability!

Observational Studies
The investigator observes individuals without intervention. Observed associations help to formulate hypotheses to be tested in subsequent experimental studies. Observational studies are also useful in studying rare events where we can retrospectively collect data to determine probable causes.

Strongest

Cohort
Investigate causes of disease & establish links between exposures & health outcomes. These studies examine groups of people (i.e. cohorts) & they can be future-looking or retrospective. Future-looking studies are planned in advance & carried out over a future period of time while retrospective studies look at data that already exists, identifying exposures for particular conditions.

Weakest

Case Report
Case reports are articles that describe & interpret an individual case & are frequently written as detailed stories. Case reports are considered the lowest level of evidence, but they are also the first line that forms the basis of a question for examination.