Analytical observational study

In an Analytical observational study, the researcher observes and measures variables without directly manipulating them. Observational studies can be further classified into:

In analytical observational studies, researchers try to establish an association between exposure(s) and outcome(s). Depending on the direction of enquiry, these studies can be directed forwards (cohort studies) or backwards (case–control studies).

Observational study are one where researchers observe the effect of a risk factor, diagnostic test, treatment or other intervention without trying to change who is or isn't exposed to it.

An observational study draws inferences about the possible effect of a treatment on subjects, where the assignment of subjects into a treated group versus a control group is outside the control of the investigator.

This is in contrast with experiments, such as randomized controlled trials, where each subject is randomly assigned to a treated group or a control group.

Classification

Cohort Study:

Prospective Cohort Study

Cross-Sectional Study: These studies collect data at a single point in time to analyze the relationship between variables. They do not follow individuals over time. Cross-sectional studies are often used for prevalence studies.

Nested Case-Control Study: These are a subset of cohort studies where a case-control study is nested within a larger cohort study. Cases are selected from the cohort, and controls are selected from the cohort members who have not experienced the outcome of interest.

Ecological Study: In this type of study, data is collected at the population level, and researchers analyze relationships between variables at the group or population level. These studies are often used to generate hypotheses but have limitations in establishing causation.

Case-Crossover Study: This design is often used to study acute exposures and their immediate effects. Cases serve as their own controls by comparing their exposure status in a specific time window before the outcome event to a control period.

Longitudinal Study: This is a broad category that includes cohort studies and any study that collects data from the same individuals over an extended period, allowing researchers to examine changes over time.

Prospective vs. Retrospective Studies: Studies can be prospective (data collection occurs after the study is designed and initiated) or retrospective (data is collected from existing records or past

events).

Observational vs. Experimental Studies: Analytical observational studies are distinct from experimental studies, where researchers manipulate variables to establish causation. Observational studies can only establish associations or correlations.

Comparative Effectiveness Research (CER): These studies compare the effectiveness of different healthcare interventions, treatments, or healthcare delivery methods to determine which is the most effective for a specific condition or population.

Concurrent vs. Non-Concurrent Studies: Concurrent studies collect data from different groups at the same time, while non-concurrent studies collect data from different groups at different times.

Prospective vs. Retrospective Data Collection: Depending on when data is collected in relation to the outcome or exposure of interest, studies can be classified as prospective or retrospective.

Cohort study.

Case control study.

Cross-sectional study.

Longitudinal cohort study.

A Cross-sectional study evaluates the risk factors and effect at a single point in time without any follow-up. It provides more evidence than case series and is located on the level of evidence (LOE) between the case series study and the longitudinal retrospective cohort study. A longitudinal study evaluates the patient at different times. The classification can be retrospective (case control study) and prospective (cohort study).

They are located on the level or quality of evidence between the cross-sectional studies and randomized clinical trial. In a retrospective cohort study, the outcome is measured at the end of the work, and the variables are verified in the database or patient records.

In a prospective cohort study, the outcome and the measures are defined at the beginning of treatment and the patients are followed to verify if the disease is positive or not.

see Prospective observational study.

see Retrospective observational study.