

Types of Study Designs in Epidemiology

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1. Introduction

- Study designs are structured methods for collecting and analysing data to answer health questions.
- The choice of design affects validity, cost, and the strength of evidence.

2. Descriptive Studies

- **Case reports and case series:** describe one or more patients to generate hypotheses.
- **Cross-sectional studies:** measure exposure and disease at one point in time to estimate prevalence.

3. Observational Analytical Studies

- **Cohort study:** follows exposed and unexposed groups over time to measure incidence.
- **Case-control study:** compares people with and without disease to assess past exposure.
- These designs identify associations without assigning exposure.

4. Experimental Studies

- **Randomised controlled trial:** participants are randomly allocated to intervention or control groups.
- Randomisation reduces confounding and gives the strongest evidence of cause.

5. Choosing a Design

- Rare diseases suit case-control studies, while rare exposures suit cohort studies.
- Ethics, time, and resources influence which design is feasible.

6. Summary

- Epidemiological designs range from descriptive to experimental, each with strengths and limitations that determine the quality of evidence produced.