

# EPIDEMIOLOGY

## Selection and Information Bias in Epidemiological Studies

### BIAS

“Any systematic error in the design, conduct or analysis of a study that results in a mistaken estimate of an exposure’s effect on the risk of disease.”\*

### Selection bias

### Information bias

### DEFINITION

Systematic error introduced during the selection of study participants (implementation and/or analysis phases).

Systematic error introduced by the collection of information that is erroneous from study participants (data collection phase).

### IMPACT

The study population is NOT representative of the target population.  
It impacts the study’s internal and external validity.

Can result in:

- Misclassification bias
  - Differential
  - Non-differential

### FORMS/SOURCE

In RCTs and COHORT studies:

- Inadequate concealment (RCT)
- Self-selection (e.g., volunteer bias)
- Eligibility criteria/membership bias
- Loss to follow-up
- Withdrawals
- Non-response and missing data

In CASE-CONTROL studies:

- Inadequate control selection
- Matching

- Recall bias
- Interviewer bias
- Observer or surveillance bias
- Reporting bias

### PREVENTION

- At design stage: retain study participants
- Sensitivity analysis

- Standardized data collection tools
- Blinding
- Validated instruments
- ‘Phantom’ control (for interviewer bias)
- Objective & multi source information
- Sensitivity analysis