



Study types-Part 1

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Outline

- Study types based on design.
- Study types based on time.
- Study types based on intervention.
- Observational & Experimental studies.
- Cross-sectional studies.



Study types: based on design

- Qualitative study.
- Quantitative study.

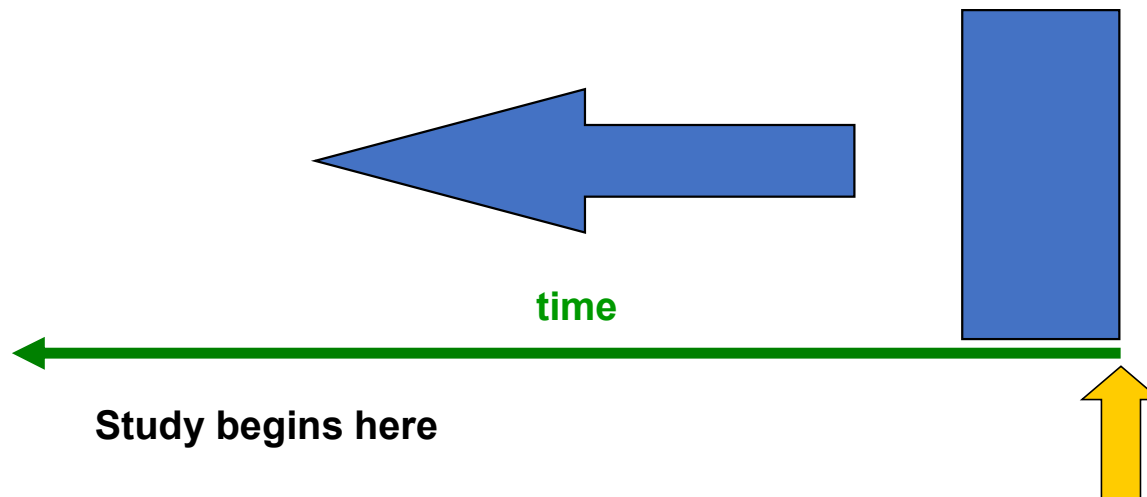


Study types: based on time

- Retrospective : Any design that looks at data that have already been gathered.
- Prospective : Any design that collects data on groups of subjects over time, beginning at time zero.

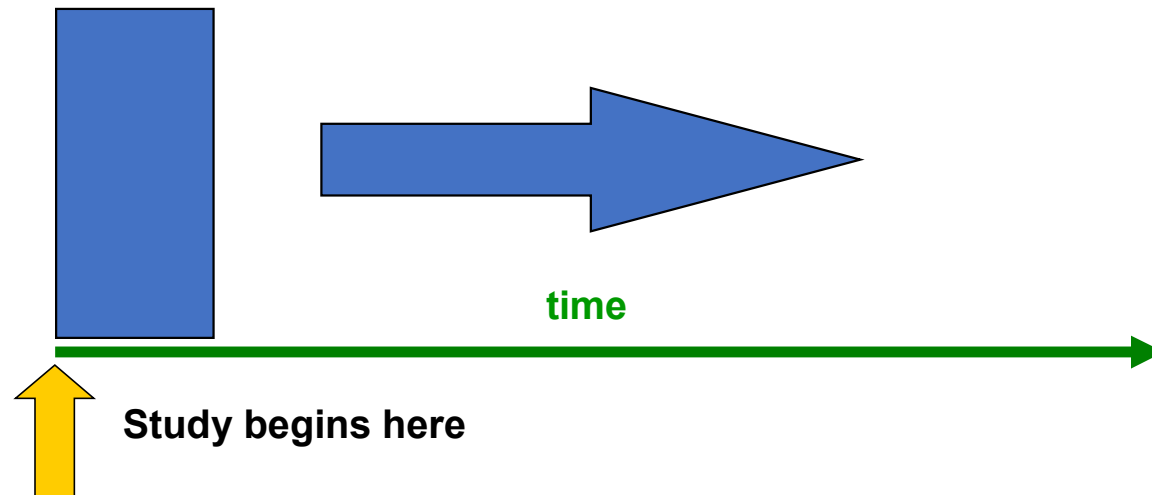
Timeframe of Studies

- **Retrospective Study** - “to look back”, looks back in time to study events that have already occurred



Timeframe of Studies

- **Prospective Study** - looks forward, looks to the future, examines future events, follows a condition, concern or disease into the future

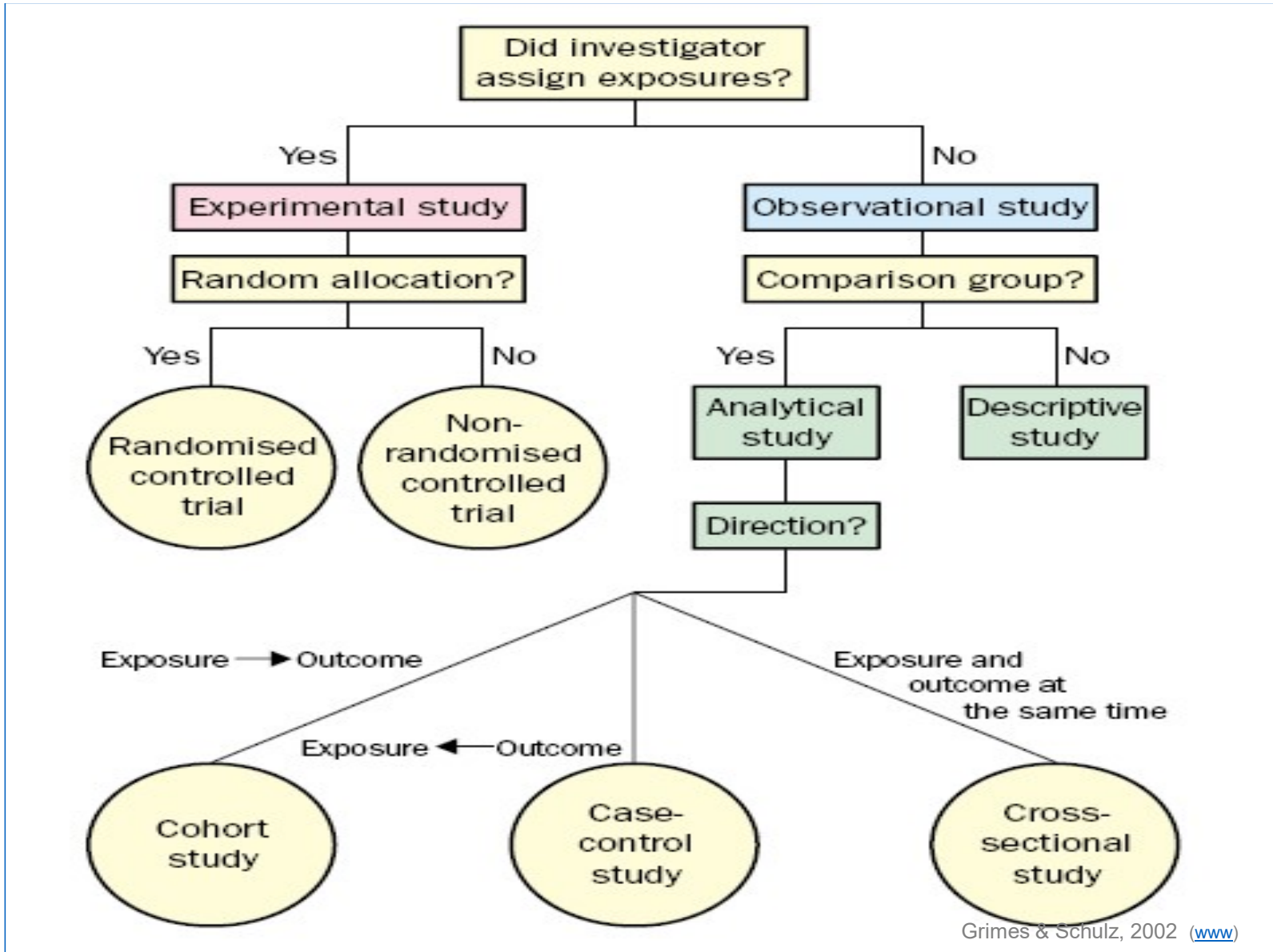




Study types: based on intervention

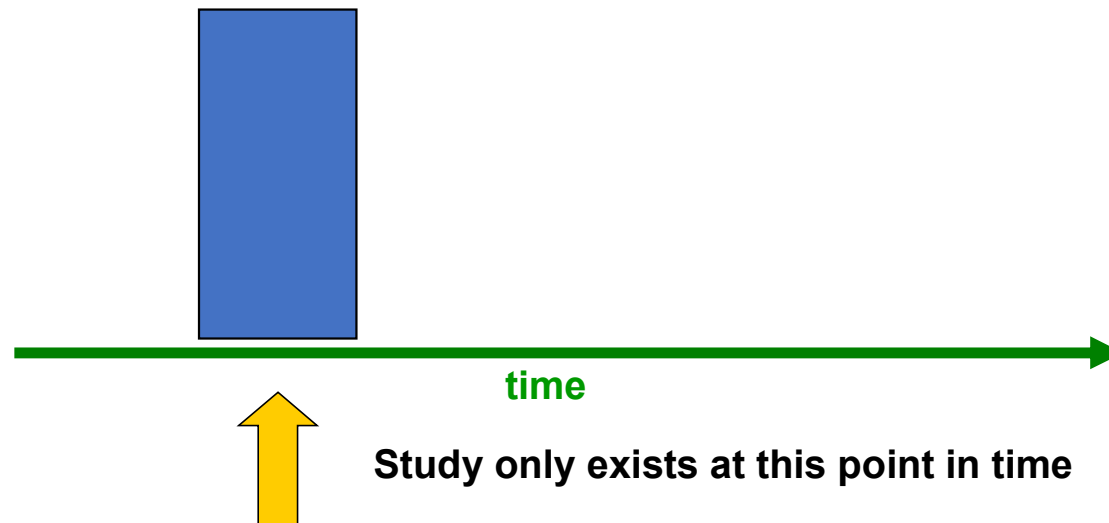
It divides the studies into two categories

1. Observational studies (no intervention): the investigator measures but does not intervene.
2. Experimental studies / Interventional studies: involve an active attempt to change a disease determinant, such as an exposure or a behaviour, or the progress of a disease through treatment.

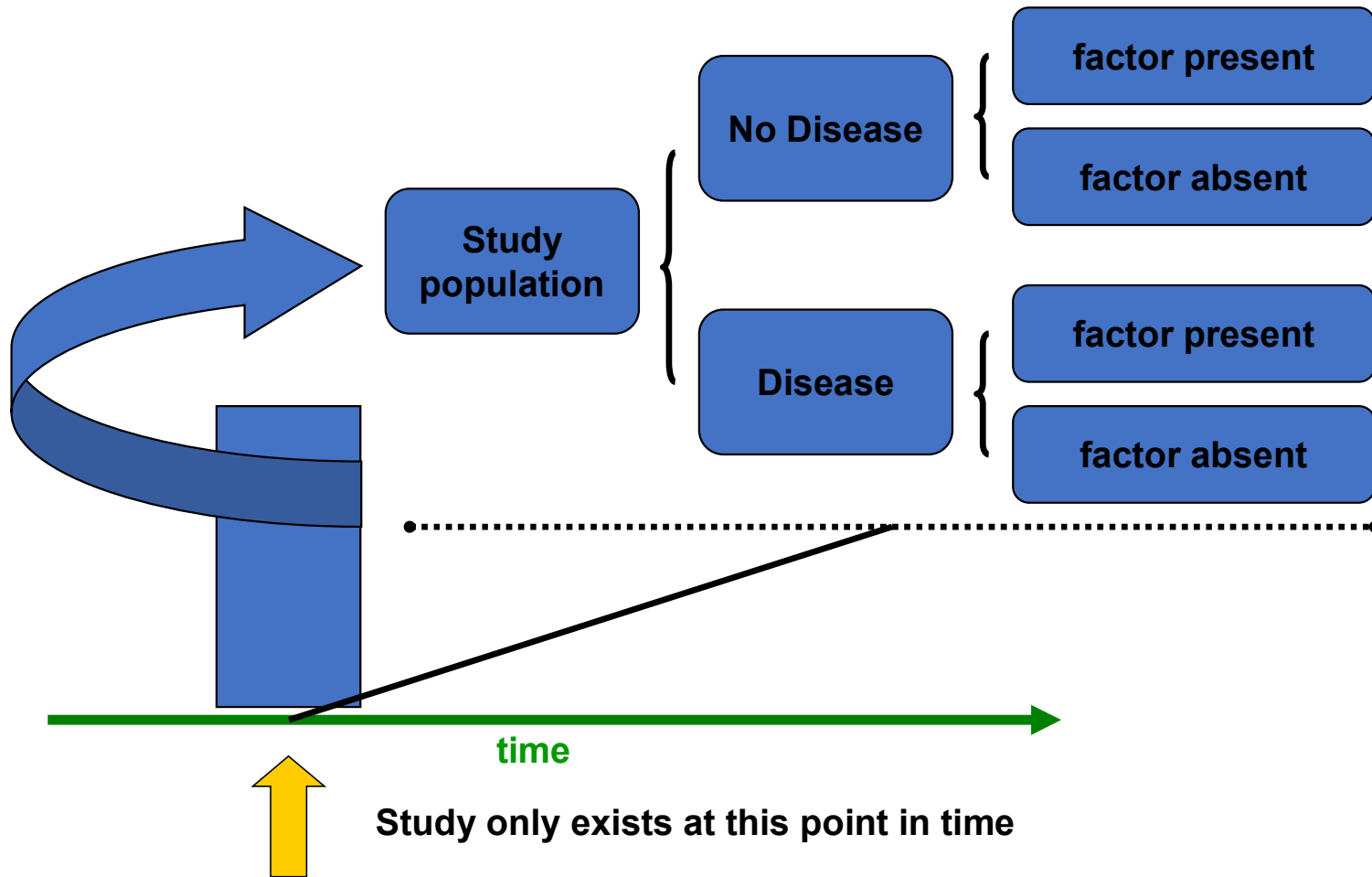


Cross-sectional studies

- Measures simultaneously the exposure and health outcome in a given population and in a given geographical area at a certain time.



Cross-sectional Design





Uses of cross-sectional studies

- Often used to study conditions that are relatively frequent with long duration (nonfatal, chronic conditions).
- It measures prevalence, not incidence of disease.

Example: prevalence of diabetes mellitus in a community.



Strengths of cross-sectional studies:

- Relatively quick, easy and economical to conduct.
- Can estimate prevalence of outcome of interest because sample is usually taken from the whole population.
- Many outcomes and risk factors can be assessed.
- Provide important information on the distribution and burden of disease.



Strengths of cross-sectional studies(Cont.):

- Appropriate for screening hypotheses because they require relatively shorter time and fewer resources.
- There is no loss to follow-up.
- Can provide initial information on exposure -outcome relationship.



Weaknesses of cross-sectional studies

- Cannot tell us about causal relationships.
- Generalizability of the finding is limited.
- Sample size requirements may be very large (especially when looking at rare outcomes or exposures).
- Potential for selection bias.



Weaknesses of cross-sectional studies(Cont):

- Can not estimate incidence of the disease.
- Not suitable for studying rare or highly fatal diseases or a disease with short duration of expression.
- It is difficult to establish the time-sequence of events and hence etiology.



Cross-sectional studies

Basic measure : Prevalence

- Hypothesis:
Smoking is a risk factor for heart diseases.

Sample :

100 retirees living in Erbil city.

Prevalence

- Proportion of individuals in a population who have the disease or condition of interest at a specific time period

$$P = \frac{\text{Number of cases of the disease or condition}}{\text{Total population}}$$

Cross-sectional studies

Basic measure : Prevalence

- 2x2 table

| | | Heart disease | |
|---------|---|---------------|----|
| | | + | - |
| Smoking | + | 50 | 10 |
| | - | 10 | 30 |



Cross-sectional studies

Basic measures : Prevalence

- Prevalence of heart disease among smoker= $50/60=0.8$.
- Prevalence of heart disease among non-smoker= $10/40=0.2$.
- Prevalence ratio = $0.8/0.2= 4.0$.

Smoker are four times more likely to have heart disease than non-smoker.



References

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