

Scientific medical research Summary with some past papers

Lectures (10-12)

7-Randomly assigning groups of people to an intervention group and other groups of people to a control group is known as :

- a. Quota randomization
- b. Block randomization
- c. Stratified randomization
- d. Cluster randomization

12-What type of research design involves an intervention but no randomization?

- a. Quasi-experimental
- b. Crossover
- c. pre-experimental
- d. Factorial

15-What type of sampling divides the population into homogeneous strata from which elements are selected at random ?

- a. Simple random sampling
- b. Probability cluster sampling
- c. Cluster sampling
- d. Stratified random sampling

32-Block randomization:

- a. Consecutive assignment of participants to either intervention or control group
- b. purposefully assigns participants to intervention group based on response to treatment
- c. Assigns Cluster of non-diseased to control group and diseased participants to Intervention group
- d. Assigns groups of participants to an intervention group and other groups of participants to a control group

From sheets

Chapter 12 (Experimental studies)

12.1 → RCT : randomized controlled trials are the gold standard for assessing causality

12.4 → RCT approach

- ↳ cross over design → every participants has the same probability to be selected in control group or intervention group
- ↳ factorial design → some times different interventions compared in various combinations within one randomized

controlled trial

12.6 → randomization

- ↳ simple randomization → use a coin toss, a random number generator, or some uncomplicated procedure to assign each individual to one of the groups
- ↳ block randomization → Randomly assigns groups of people to an intervention group and other groups of people too a central group.
- ↳ stratified randomization → individuals are grouped into strata and then randomized to one treatment group, useful when simple randomization may not result enough members of certain subgroups being randomized

* some experimental studies use non randomized approaches because randomization unethical or not feasible such as Quasi - experimental design

* natural experiment → is a research study in which the independent variable isn't manipulated by the researcher but instead changes due to external forces

Additional notes

Chapter 12

* random sampling → used in the observational studies

* randomization → used in the experimental studies

* experimental study:

- ↳ when to use this approach → assessing causality
- ↳ first step → decide on the intervention and eligibility criteria
- ↳ what to watch out for → non compliance
- ↳ key statistical measure → efficacy

12.3 → definition outcome

1- superiority trials → aim t demonstrate that a new intervention is better than som type of control

2- non inferiority trials → the intervention isn't worse than the control

3- equivalence trial → the intervention is equal to the control

12.4 → selecting controls

Placebo → an inactive comparison that the similar to the being test

Hawthorne effect → participants in both active and comparison groups may change their behavior to better because they know they are being tested

12.5 → blinding

Two types

1- single blind experimental study

2- double blind experimental studies

Type of information bias

1- reporting bias → one study group under reported or over reported

2- defection bias → surveillance bias, group that is routinely screened for adverse health condition incorrectly appears to have a higher than typical rate of the disease

3- observer bias → when observer intentionally or unintentionally evaluates participants differently based on their group membership

Some notes from chapter 14

14.1 → correlational studies over view → known as ecological study and aggregate study uses population level data to look for associations btw two or more group characteristics, No individual level data are used

* correlational studies

↳ first step → select the sources of data that will be used

↳ what to watch out for → the ecological fallacy, limited publication venues

↳ key statistical measure → correlation

14.2 → aggregate data → at least two population level must be available for each population (exposures

And outcomes must be measured similarly in all populations being compared)

14.3 → correlation depends on the level of the measurements of the variables → plot each population on a scatter plot

14.4 → age adjustment → to more fairly compare populations with very different age distributions