### A Very Small Introduction to Research Methods Sampling and measurement (Day 5) Prepared for the Brilliant Nowhiba students

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# Sampling

### Why Take samples? Why not test everyone?

- Cannot test the entire population of a disease or condition
- Must rely on testing a sample that best represents the population
- Generalize the conclusion back (truth in the sample) to the population (truth in the universe)

Hypothesis: Becker Muscular Dystrophy (BMD) severity is Dependent on the location of the mutation within the dystrophin rod gene

Targeted Population BMD patients exhibiting a range of symptoms severity Accessible Population

Patients with (BMD) being treated at the KAUH

Intended Sample

The number of patients asked to participate in the study

Actual Sample (subjects)

The number of patients who participate in the study

Selection Criteria

Inclusion Criteria: List of the main characteristics of the targeted population

- Demographic: Becker muscular dystrophy 15-55
- Clinical: Mild to sever symptoms
- Geographic: Jeddah KAUH
- Temporal: Over a defined 6 months period
- problem: what is the definition of mild or sever?

**Exclusion Criteria** 

- Specific list applied to eligible sample (meeting inclusion criteria) but also meeting few more criteria to "not to" include them in the study.
- The more exclusion criteria, the more the restrictions, the smaller the sample.
  - Pain hypersensitivity
  - Overly medicated on pain reducers
  - Using new experimental steroid therapy

#### **Team Exercise 3**

# Select your inclusion and exclusion criteria



### Measurement Scales

- Continuous: quantified on an infinite scale
  - Random: weight, RBC, BP, Glucose
  - Discrete: Limited to integers, number of cigarettes/day, number of pregnancies
- Categorical: can not be quantified
  - Dichotomous: only two categories, sex, mortality, Rh
  - Nominal: more than two categories: Blood type, ethnicity
  - Ordinal: ordered categories: Pain scale, evaluations



- The most information is found in
- Continuous
- Then
- Ordinal
- Then
- Nominal

## Flexibility of types

- Sometimes it might be easier to convert a continuous data to categorical
- Babies with low birth weight and IQ.
- Pick a weight, 2300 grams
- Anything below is low birth weight
- Anything above is normal.
- The opposite can be done also
- Students evaluations are ordinal that are turned into a score

### What do you think these measurements are?

- Month: January, February, March,...
- Cost of a liter of milk in SAR
- Survey of the phone service
- Wining a football game
- Number of computer attacks on a server