Statistics
Chapter One

- Evidence informed practice: use of best clinical evidence in making patient care decisions
  → Best source of evidence: systematic research

- Research is systematic inquiry that uses orderly, disciplined methods to answer questions or solve problems
  → Nursing research aims to generate evidence that can contribute to evidence informed practice for nurses

- Statistics: organizing, summarizing, analyzing, & interpreting information (data) gathered in a study

- Data: the information gathered to address research questions
  → In quantitative research data are usually quantitative (numbers) and are subjected to statistical analysis
  → Can come from interviews/questionnaires, observation, biophysiologic measurements

- Concept: an abstraction inferred from characteristics or behaviours eg. height, sex, respiration rate
  → In quantitative studies Concepts are called variables
  → Variable: Something that takes on different values (it must vary) eg. height varies from one person to the next

- Independent variable: the hypothesized cause of (or influence on) an out come

- Dependent variable: the outcome of interest, hypothesized to depend on or be caused by the independent variable

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- In studies, variables need to be defined
  - → Conceptual definition: the theoretical meaning of the underlying concept (what the concept means)
  - → Operational definition: the precise set of operations and procedures used to measure the variable

- Discrete variables: categories are indivisible w a finite number of values btwn two points
  - → Eg. # of siblings, can't have half a sibling

- Continuous variable: Can (in theory) assume infinite number of values btwn 2 points

- Measurement: Involves assigning numbers to qualities of people or objects to designate the quantity of the attribute
  - → level of measurement: A system of classification w four types of measurement rules that affect the kind of statistical analysis that is appropriate
    - → ~~Nominal~~ → ~~Ordinal~~ → ~~Interval~~ → ~~Ratio~~

- Nominal: lowest form of measurement, numbers are used simply as labels to name categories eg. Sex coded w 2 numbers
  - → It doesn't matter what the codes are, the numbers have no quantitative meaning (#s cannot be treated mathematically)

- Ordinal: uses numbers to designate ordering on an attribute
  - → Conveys some information about amount but does not indicate distance btwn values eg. degree of pain
  - → Distance is not equal & is not known
    - → Averages do not make sense

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- **Interval**: also uses numbers to designate ordering on an attribute and conveys information about amount
  → Distance btwn values are assumed to be equal, averages can be computed. eg. temperature

- **Ratio**: uses numbers to designate ordering, conveys info about amount, distances are equal
  → There is a real rational zero, averages can be computed
  eg. medication dosages

- Descriptive Statistics: Researchers collect their data from a sample of study participants - a subset population of interest
  → Describe and summarize data about the sample

- Inferential Statistics: Researchers obtain data from a sample but often want to draw a conclusion about a population
  → Parameter: A descriptive index for a population eg. Average daily caloric intake of all 10-year-olds in new york
  → Statistic: A descriptive index for a sample
  → Researchers use statistics to make inferences about parameters
  → Inferential statistics, based on laws of probability, help researchers draw conclusions about a population using data from a sample
    → Often used to test hypotheses about relationships between variables