Descriptive Study Design

Descriptive study design include case reports and case series, cross-sectional surveys, and exploratory ecologic designs.

Descriptive Studies

ECOLOGIC STUDIES -	involves making comparisons between variables where the unit of analysis is aggregated data on the population level rather than on the individual level
CROSS--SECTION STUDIES	all variables measured at a point in time
CASE REPORT	is a profile of a single individual; it includes qualitative descriptive research of the facts in chronological order
CASE SERIES	involves a small group of patients with a similar diagnosis

RATIOS, PROPORTIONS, RATES

	Ratios, proportions, and rates are commonly used measures for describing dichotomous data. The general formula for a ratio, proportion, or rate is: X/Y x 10z
RATES	a type of frequency measure where the numerator involves nominal data that represent the presence or absence of a health-related state or event

RATIOS, PROPORTIONS, RATES (cont)

RATIOS	the values of x and y are distinct, such that the values of x are not contained in y. The rate base for a ratio is 100 = 1
PROPORTIONS	x is contained in y. A proportion is typically expressed as a percentage, such that the rate base is 102 = 100.

Dichotomous data- Divided or dividing into two parts or classifications.

CALCULATION RATES

DEFINITIONS	CALCULATIONS
Incidence rate- is the number of new cases of a specified health-related state or event reported during a given time interval	Incidence Rate= New cases occurring during a given time period/population at risk during the same time period multiplied by 10z
Mortalilty Rate- is the total number of deaths reported during a given time	Mortality Rate = Deaths occurring during a given time period/ Population from which deaths occurred Multiplied by 10z

CALCULATION RATES (cont)

Person-Time Rate- When the denominator of the incidence rate is the sum of the time each person was observed	Person Time rate= New cases occurring during an observationperiod/Time each person observed, totaled for all persons multiply by 10z
Attack Rate- It involves a specific population during a limited time period, such as during a disease outbreak. It is also referred to as a cumulative incidence rate or risk	Attack Rate=New cases occurring during a shirt time period/Population at risk at the beginning of the time period multiplied by 100
Secondary Attack Rate- the rate of new cases occurring among contacts of known cases.	SAR= New cases among contacts of primary cases during a short time period/(Populations at beginning of time period)- (primary cases) multiplied by 100
Point Prevalence- he frequency of an existing health-related state or event during a time period.	Point Prevalence= Existing cases of a disease or event at a point in time/total study population at a point in time multiplied by 100

STRENGTHS AND WEAKNESSES

	DESCRIPTION	STRENGTHS	WEAKNESSESS
Ecologic study	Aggregate data involved (not for specific individuals	Take advantage of preexisting data, can be used to evaluate programs, polices or regualtions implemted at the ecological level	Susceptible to confounding exposure and disease or injury outcomes not measured on the same individuals
Cross--section studies	All variables measured at a point in time no distinction between potential risk factors and outcomes	Control over study population and measurements. several associations between variables can be studied at the same time, short time period required	Potential bias from low response rate, higher proportion of long-term survivors, does not yield incidence or relative risk

STRENGTHS AND WEAKNESSES (cont)

Case study	A snapshot description of a problem or situation for an individual or group	in-depth description, provides clues to identify a new disease or adverse health effect resulting from exposure or experience	Conclusion limited to the individual, group,and or context under study, cannot be used to establish a cause - effect relationship

CRUDE RATES VS AGE-ADJUSTED RATE

Crude rate is calculated without any restrictions such as age. however, these rates are limited if the epidemiologist is trying to compare them between subgroups of the population or over time because of potential confounding influences, such as differences in the age distribution between groups.	An age-adjusted rate is a weighted average of the age-specific rates.Rates based on data covering age intervals of 5 or 10 years are generally preferred because they are more stable than rates based on single-year age intervals.

Indirect method of age adjustment- In situations in which age-specific rates are unstable because of small or missing numbers, age adjustment is still possible with the indirect method.

CRUDE RATES VS AGE-ADJUSTED RATE (cont)

standard morbidity/mortality ratio (SMR).	Interpretation ■ SMR = 1: The health-related states or events observed were the same as expected from the age-specific rates in the standard population. ■ SMR > 1: More health-related states or events were observed than expected from the age-specific rates in the standard population. ■ SMR < 1: Fewer health-related states or events were observed than expected from the age-specific rates in the standard population.

4 TYPES OF DATA

Nominal	unordered categories or classes (e.g., gender, race/ethnicity, marital status, occupation).
Ordinal	additional information provided by the order among categories (e.g., stage or grade of cancer).

4 TYPES OF DATA (cont)

Dsicrete	integers or counts that differ by fixed amounts, with no intermediate values possible (e.g., number of new cases of lung cancer reported in the United States in a given year, number of children, number of sick days taken in a month).
Continous	measurable quantities not restricted to taking on integer values (e.g., age, weight, temperature).

TABLES, GRAPHS AND NUMERICAL MEASURES

The simplest table is the frequency distribution, which is a complete summary of the frequencies, or number of times each value appears.	Epidemic Curve- is a histogram that shows the course of an epidemic by plotting the number of cases by time of onset. ■ A stem-and-leaf plot is a display that organizes data to show their distribution.
A histogram shows a frequency distribution for discrete or continuous data.	Bar charts are often used for graphically displaying a frequency distribution that involves nominal or ordinal data.

Numerical Methods

Measures of central tendency refer to ways of designating the center of the data. The most common measures are the arithmetic mean, geometric mean, median, and mode	Arithmetic and Geometric Mean

Measures of dispersion, also called the spread or variability, are used to describe how much data values in a frequency distribution vary from each other and from the measures of central tendency.

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