



# Cross – Sectional Studies

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# What is Cross-Sectional Studies



# Classification of Research Study Designs

<b>I. Non-interventional (observational) studies</b>			?
<ul style="list-style-type: none"> <li>▪ Exploratory?</li> </ul>			Qualitative
<ul style="list-style-type: none"> <li>▪ Ecological (correlational)</li> </ul>	population as study unit?		Quantitative
<ul style="list-style-type: none"> <li>▪ Case reports</li> <li>▪ Case series?</li> <li>▪ Cross-sectional surveys</li> </ul>	individual as study unit?	Descriptive Studies	
<ul style="list-style-type: none"> <li>▪ Cross-sectional comparative study ?</li> <li>▪ Case control?</li> <li>▪ Cohort?</li> </ul>		Analytical Studies	
<b>II. Interventional studies</b> ?			
<ul style="list-style-type: none"> <li>▪ Experimental studies (Randomized) ?</li> <li>▪ Quasi-experimental studies (Not Randomized)?</li> </ul>			

# What is a Cross-Sectional Study?

- A type of **observational** study design.
  - The investigator does not alter the exposure status.
- The investigator measures the outcome and the exposures in the study participants **at the same time**.

# Types of Cross-Sectional Studies

## **Descriptive** cross-sectional studies

- Study **prevalence** of health related events at a point in time/snapshot
- Diseases, risk factors, coverage of interventions, health service utilization, knowledge, attitude and practice

## **Analytical** cross-sectional studies

- Assess **association** between exposure and outcome.
- Exposure and disease status are assessed simultaneously among individuals at the same point in time
- **Compare prevalence** of disease in persons with and without the exposure of interest

# How to Conduct a Cross-Sectional Study

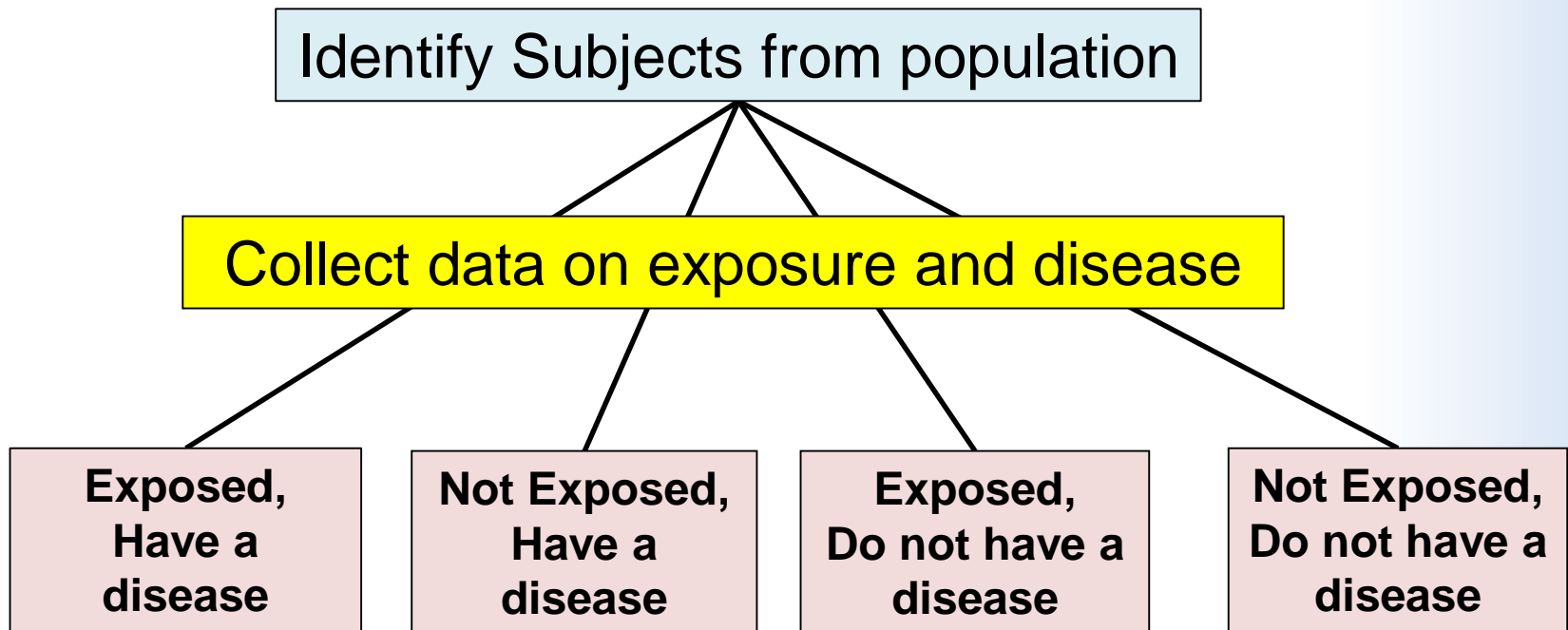


# Steps in Conducting Cross-Sectional Studies



1. Define a **population** of interest (reference or source population)
2. Recruiting a representative **sample** (adequate size, random selection)
3. Measure the **variables** of interest (disease/exposure) at the same point in time
4. **Analyze** the data

# Designing Cross-Sectional Studies



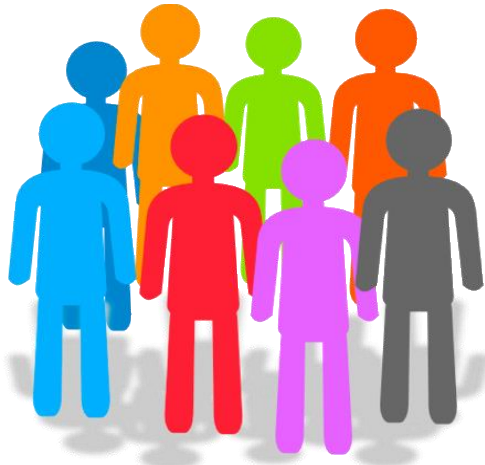


# Designing Cross-Sectional Studies

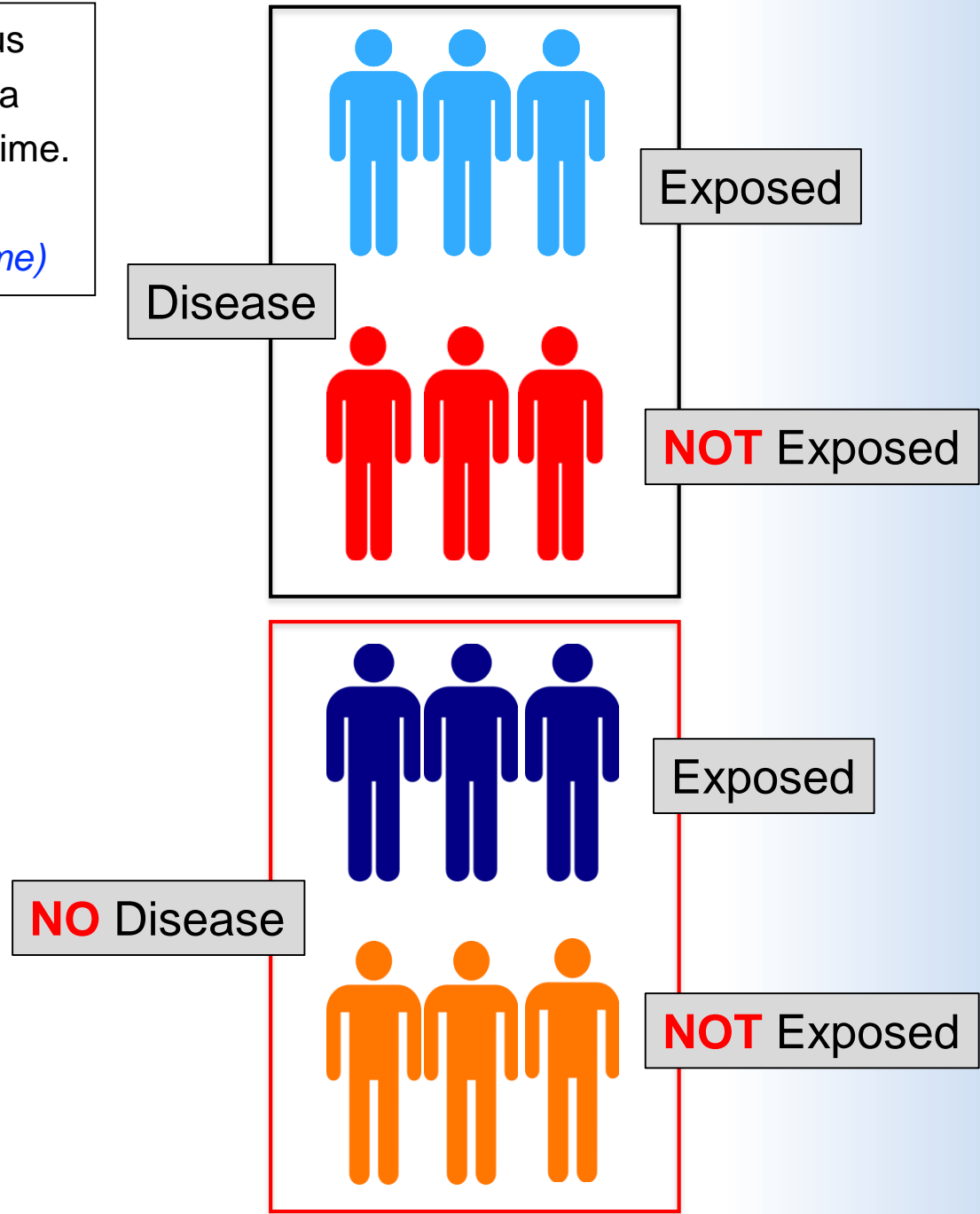


- The participants in a cross-sectional study are selected based on **the inclusion and exclusion criteria** set for the study.
- Once the participants have been selected for the study, the investigator follows the study to assess the exposure and the outcomes.

Measure disease and exposure status **simultaneously** among individuals in a well-defined population at a point in time.  
*(Snapshot of the health status of populations at a certain point in time)*



Study Population



# Electronic Cigarettes and Conventional Cigarette Use Among US Adolescents

## A Cross-sectional Study

Lauren M. Dutra, ScD; Stanton A. Glantz, PhD

**IMPORTANCE** Electronic cigarette (e-cigarette) use is increasing rapidly among adolescents, and e-cigarettes are currently unregulated.

**OBJECTIVE** To examine e-cigarette use and conventional cigarette smoking.

**DESIGN, SETTING, AND PARTICIPANTS** Cross-sectional analyses of survey data from a representative sample of US middle and high school students in 2011 (n = 17 353) and 2012 (n = 22 529) who completed the 2011 and 2012 National Youth Tobacco Survey.

**EXPOSURES** Ever and current e-cigarette use.

**MAIN OUTCOMES AND MEASURES** Experimentation with, ever, and current smoking, and smoking abstinence.

← Editorial page 601

← Related articles pages 684 and 688

+ Supplemental content at [jamapediatrics.com](http://jamapediatrics.com)

# Measurements in Cross-Sectional Studies

## Prevalence

$$\text{Prevalence} = \frac{\text{Number of cases in a defined population at one point in time}}{\text{Number of persons in a defined population at the same point in time}}$$

# Prevalence, Example

**Research Topic:** prevalence of vitiligo in a village.

**Design:** population-based survey was designed to assess the prevalence of this condition.

We go to all the houses that were supposed to be included in the study and examine the population. **The total sample surveyed is 5686.** Of these, we found that **98 individuals have vitiligo.**

**The prevalence of vitiligo in this community is:**

Prevalence =  $98/5686$  or 17.23

# Measurements in Cross-Sectional Studies

## Odd ratio (OR)

	HIV positive	HIV negative	Total
Males	50	150	200
Females	10	90	100
	60	240	300

The OR is  $AD/BC$

$50 \cdot 90 / 10 \cdot 150$

OR is 3.0

# Bias in Cross-Sectional studies

## **Selection bias**

# Bias in Cross-Sectional studies

## **Confounding bias**



# Strengths Cross-Sectional Studies



# Weakness

## Cross-Sectional Studies





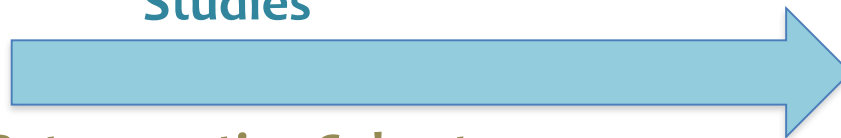
# Summary



**Cross-Sectional studies**



**Prospective Cohort Studies**



**Retrospective Cohort studies**



**Case-Control Studies**





Thank  
You