

Scientific medical research

Summaries and some past papers

6-Which of the following would be the first step in conducting a cross-sectional survey?

- a. Define a source population
- b. Decide on methods to be used for data collection
- c. Develop a strategy for recruiting a representative sample
- d. Describe the exposure and/or disease status in a population

Answer:A

23-What type of studies seek to recruit a study population that is representative of a well- defined larger population ?

- a. Case-control studies
- b. Meta-analysis
- c. Cross-sectional studies
- d. Case series

Answer:C

9-Which of the following is a key characteristic to watch out for when performing a case series study ?

- a. Lack of validity

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Answer:C

- b. Lack of specificity
- c. Lack of generalizability
- d. Lack of sensitivity

21-The study design that measure the prevalence of various exposure histories, disease states, and demographic characteristics in one well-defined population at one point in time .

- a. Cross-sectional surveys
- b. Case control

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Answer: A

- c. Case series
- d. Prospective cohort

24-Case definitions are :

- a. Essential for any outbreak investigation no matter which study approach is used .
- b. Essential for any cross-sectional study .
- c. Not essential in cohort studies .
- d. Part of literature review in the study .

Answer : A

25-Which of the following is the measure of association that readers will expect to be reported for a case-control study ?

- a. Confidence interval
- b. P-value
- c. Chi-square
- d. Odds ratio

Answer:D

5-In cross-Sectional studies ,

- a. The aim is to describe Odds ratio
- b. Either exposure or outcome should be available
- c. Recall bias is a problem to watch for
- d. You need hundreds of participants

Answer:D

7-What type of studies would be the best approach to "compare rates of new corona cases among Jordanian people with different exposure histories ?"

Incidence

- a. Correlational studies
- b. Case series
- c. Case-control studies
- d. Cohort studies

From sheets

Chapter 8

8.1 → case series

↳ first step → specify what new and important information → identify a source of cases → assign a case definition → select the characteristic of the study population that will be described

↳ statistical key measure → only description statistic

↳ what to watch out → lack of generalizability

↳ requirement → appropriate source of population

Chapter 9

9.1 → cross sectional survey = prevalence

↳ first steps → define a source population → develop a strategy for recruiting a Representative sample

→ decide on method to be used

↳ key statistical measure → prevalence

↳ what to watch out → non Representative

↳ requirement → exposures and outcomes, recruit several hundred participant

Chapter 10

10.1 → case control

- ↳ first steps → identify a source of population → assign-a case definition → decide what type of control population will be appropriate for the study → decide whether cases and controls will be matched
- ↳ key statistical measure → odd ratio [OR]
- ↳ what to watch out → recall bias
- ↳ requirement → a source of population available

Chapter 11

11.2 → cohort study

- ↳ first steps → identify the source of population with exposure → decide what type of unexposed individuals will be an appropriate comparison group.
- ↳ key statistical measure → incidence rate ratio, known as relative risk
- ↳ watch out for → loss of follow up [prospective], missing records [retrospective]

Additional notes

Chapter 7

- primary studies take longer time than secondary and tertiary studies
- Primary studies → time consuming during collecting data
- Tertiary studies → review literature and meta analysis
- Primary study design can be selected based on which EDPs is the major motivation of the study
- Cohort study and experimental study → need follow up of participant
- Case series → describe group of individuals with a disease
- Cross sectional study → describe exposure and /or disease in population
- Case control study → comparison btw two groups with different exposure histories
- Experimental study → compare outcomes in participants → intervention or control group
- Meta analysis, review → synthesize existing knowledge
- Cohort for exposure, case series for disease

Chapter 8 → case series

- case definition → include person, place and time → define as inclusion and exclusion criteria, essential for any outbreak investigation, No matter which study approach is used
- Special consideration → use questionnaire, missing information doesn't mean that the symptoms was not present, ethical approval achieved, you can use photographs only when you get a written permission from the patient

Chapter 9

- cross sectional survey → used in collecting data, one point in time during a particular time period
- In cross sectional → measure proportion of a population with a particular exposure risen
- In cross sectional → participant must be reasonably Representative of some longer population

Chapter 10

- case control study → case group [have disease and symptoms], control group [without disease]
- The difference btw these two groups only the presence of disease
- Case control study good for studying uncommon disease
- Recall bias → the patient can't remember all details

Chapter 11

- Cohort studies are observational not experimental studies
- Framingham study → one of the most famous cohort study

3-Studies that measure individuals randomly sampled from the same populations at different points in time are using .

- a. Longitudinal cohort approach
- b. Dynamic population approach
- c. Repeated cross-sectional approach
- d. Prospective cohort study approach

17-What type of study method is used for many of the largest studies conducted by the U.S. Centers for Disease Control and Prevention ?

- a. Longitudinal cohort survey
- b. Meta-analytical survey
- c. KAP survey
- d. Repeated cross-sectional survey

22-Participants of what kind of study are recruited based on membership in a well-defined source population ?

- a. Longitudinal cohort study
- b. Retrospective cohort study
- c. Prospective cohort study
- d. Historic cohort study

27-What type of study design should be used to investigate an exposure that is relatively uncommon but a source of exposed individuals is available ?

- a. Prospective cohort study
- b. Longitudinal cohort study
- c. Panel study
- d. Time-series study

From sheets

Chapter 9

9.3 → KAP → Knowledge, Attitudes, practice → commonly used cross sectional study

↳ helpful for identifying gaps btw what people know and how they act on that knowledge

9.4 → Repeated cross-sectional Surveys

↳ this type of study doesn't track the same individuals Forward in time

↳ Re samples and Re surveys Representative From the source of population at 2 Or more different time

points

Chapter 11

11.2 → Types of short studies

a. Retrospective → Recruit based on Exposure in the past, uses follow up data from some point after

that old Exposure

b. prospective → Recruit based on exposure Status in the present, follows them Forward the time

c. Longitudinal → Recruits a representative sample population and follows people Forward in time, in

addition to that participant are Recruited based on Membership in one town

* Note → retrospective and prospective. Participants are recruited based on their exposure status

When we use Each approach??

1. retrospective and prospective → when an exposure is relatively uncommon but a source of exposed individuals is available

2. Longitudinal → when the goal is to examine multiple exposures and multiple outcomes and time isn't a concern

Additional note

Chapter 9

* the most common study design → cross sectional survey = prevalence study

* cross sectional study → it's advantage → rapid data collection

Chapter 11. (Cohort study)

* longitudinal study design called time series studies or panel studies

* longitudinal cohort study used fixed population or Dynamic population

* retrospective studies requires a source of valid data

* prospective and longitudinal - studies must take steps to minimize loss Po follow up when studies continue for many years

14-What type of table is used in case-control studies to compare two dichotomous (yes/no) variables ?

- a. Crosstab
- b. Contingency table
- c. Bar histogram
- d. Two-by-two table

5-The percentage of members of a population who die of any condition during a specified time period is known as ?

- a. Death Odds Ratio

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- b. Case fatality rate
- c. Proportionate mortality rate
- d. Mortality rate

7-Which of the following is defined as the percentage of members of a population who die of any condition during a specified time period ?

- a. Case fatality rate
- b. Proportionate mortality rate
- c. Morbidity rate
- d. Mortality rate

11-Which of the following is TRUE regarding cohort studies ?

- a. Participants may have the disease of interest at the start of the study
- b. Retrospective studies should be used if adequate individuals with the outcome are available
- c. Retrospective studies should be used to examine multiple exposures and outcomes
- d. Prospective studies should be used if exposure is relatively uncommon

16-If the goal of the study is to understand populations, describe patterns, or ask research questions that are not focused on causality, the best design may be a:

- a. Case study
- b. Case series
- c. Systematic review
- d. Cross-sectional or cohort study

18-Which of the following is TRUE regarding case-control studies ?

- a. Frequency matching is the type of matching in genetic studies that link each case to a genetic sibling or another close genetic relative for analysis
- b. Risk Ratio is the measure of association that readers will expect to be reported
- c. When the entire 95% confidence interval is more than 1, the OR is statistically significant and the exposure is deemed to be protective in the study population.
- d. The variables used as matching criteria should not be considered as exposures during analysis

Chapter 11

In cohort studies → an exposure is relatively uncommon but a source of exposed individuals is available

11.2 → in longitudinal cohort study we focused on multiple exposures and multiple diseases

From sheets

Chapter 8

8.4 → case series analysis

- **Case fatality rate** (is the proportion of persons with a particular disease who die as a result of that condition)
- **Mortality rate** (is the percentage of members of a population who die of any condition during a specified time period)

- **Proportionate mortality rate** (is the proportion of deceased (dead) members of a population whose death was attributable to a particular cause)

Chapter 9

9.5 → cross sectional survey analysis

- calculate the prevalence over a short duration of time, with all data collected within a few days, weeks, or months; therefore we call it the prevalence rate.
- **Prevalence Rate**: the percentage of the population with a given trait at the time of the survey.
- **Prevalence rate ratio**: ratios that compare prevalence of a characteristic in two population subgroups.
- Causality → can't be established based on a cross-sectional study

Chapter 10

Additional note → 2*2 table are used in case control studies to compare btw dichotomous (yes/No) variables

10.1 → case-control studies → A 2*2 table displays the counts of people with various combinations of exposure status & disease status which represent odd ratio for each column

10... → design a case-control study (Matching)

- No matching → these criteria will affect-as well as the key exposure- the accuracy of the results.
- Frequency (group) matching → Select one or more controls per case who are similar by age, sex, but do not match cases to particular controls. (many controls per 1 case)
- Matched-pairs (individual) matching → Each case is personally linked to a particular individual control, (example: Recruit a genetic sibling or other control who is linked to a particular case during analysis.) (1 control per 1 case)

Chapter 11

In cohort studies → an exposure is relatively uncommon but a source of exposed individuals is available

11.2 → in longitudinal cohort study we focused on multiple exposures and multiple diseases

From sheets

Chapter 10 (case-control)

Odd of cases = no. of exposed/ no. of non exposed

OR= odd of cases/ odd of controls

If OR:

- =1 (the odds of exposures for cases and controls are the same)
- >1 (Cases had higher odds of exposure than controls, implying that the exposure was risky.)
- <1 (Cases had lower odds of exposure than controls, implying that the exposure was protective.) مثال عليها ممارسة الرياضة بتكون عامل حماية من الامراض

→ interpretation of the odds ratio based of Confidence interval

- IF the C.I is entirely lower than 1 -as the lower left one- ,then the odd ratio is statistically significant ,so the exposure is protective 10
- IF the C.I is entirely more than 1 -as the lower right one- ,then the odd ratio is statistically significant ,so the exposure is risky
- IF the C.I overlaps OR=1 -as the upper one- , then the odd ratio not statistically significant in study population

Chapter 11 (cohort)

11.4 → Analysis: Incidence Rate Ratios

I.R= (new cases / pop. At risk) * 1000

incidence rate ratio (RR)=I.R of exposed/I.R of non

- =1 The incidence rate was the same in exposed and unexposed groups
- >1 The incidence rate was higher in exposed than unexposed ,indicating that the exposure was risky
- <1 The incidence rate was lower in exposed than unexposed ,indicating that the exposure was protective

Attributable risk(AR)=I.R in exposed-I.R in non

Attributable Risk percent =AR/ I.R in exposed

13-In a cohort study, 40 out of 100 exposed developed the disease, while only 25 out of 100 unexposed developed the disease. The Rate Ratio is :

- a. 1.6
- b. %15
- c. 2.0
- d. %63

14-In a cohort study, the incidence rate was 10 in the unexposed and 25 in the exposed. Attributable Risk Ratio would be :

- a. %40
- b. %60
- c. %15
- d. %25

20-In a case-control study, Cases who were found to be exposed were 40 out of 100, while only 25 out of 100 Controls were exposed. The odds Ratio is :

- a. 4
- b. 2
- c. 0.50
- d. 0.25

13)

	disease	Free	
E	40	60	100
NE	25	75	100

$IR \text{ of Exposed} = \frac{40}{100}$
 $IR \text{ of Non} = \frac{25}{100}$
 $RR = \frac{IR \text{ of Exposed}}{IR \text{ of Non Exposed}} = \frac{40}{25} \rightarrow 1.6$

14) $IR \text{ in Exposed} = 25$
 $IR \text{ in non Exposed} = 10$

$AR = 25 - 10 = 15$

$ARR = \frac{15}{25} \times 100 \rightarrow 60\%$

20)

	Case	controls
E	40	25
NE	60	75

$\rightarrow \text{odd of Cases} = 40/60 = 0.66$
 $\rightarrow \text{odd of Controls} = 25/75 = 0.33$
 $\text{odd Ratio} = \frac{0.66}{0.33} = 2$

5-Secondary data collection might become labor intensive if which of the following have to be retrieved, read, coded, and entered into a database ?

- a. Abstracts
- b. Questionnaires
- c. Old hospital charts
- d. Full-text journal articles

1-The timeline for what type of study might be very short if an entire data file and the relevant supporting documentation can be downloaded from a website?

- a. Quaternary study
- b. Tertiary study
- c. Secondary study
- d. Primary study

16-A case-control study of night blindness revealed significant difference in the reported childhood consumption of carrots by cases and control. Which of the following statistical values contradicts that conclusion ?

- a. 95% CI (1.924-1.015) :
- b. P-Value 0.045
- c. Chi-Square = 0.568
- d. OR = 1.534

significant difference
↳ = no overlap
so, CI > 1
p-value < 0.05
OR > 1
∴ $OR = 1.534$

From sheets

Chapter 7

7.3 → study duration

- ↳ primary study → take longer time than secondary and tertiary
- ↳ secondary study → can be downloaded from website → old hospital charts
- ↳ tertiary study → depends on library access...

Chapter 10

Case control → the main measure of association is odd ratio

P-value > 0.05 → indicates no association

P-value < 0.05 → indicates statistically significant

* concordat pairs → the case and control have the same exposure history

* dis concordat pairs → the case and control have different exposure history