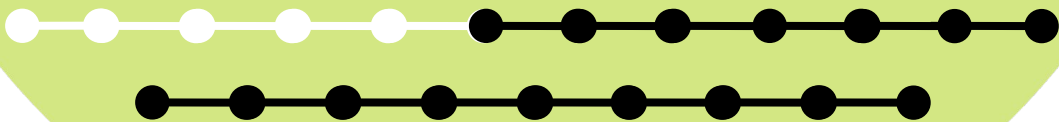


05

PRACTICAL OF STUDY DESIGNS



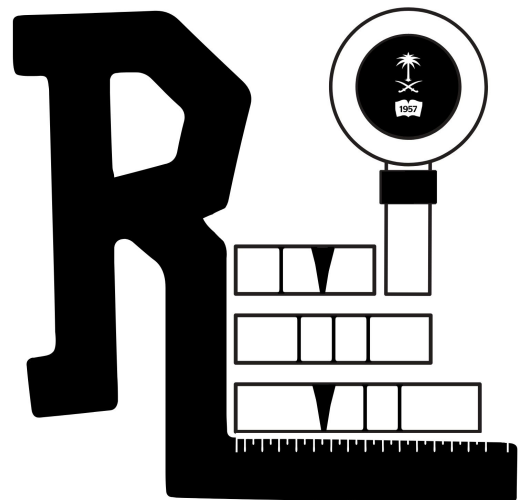
KSU COLLEGE OF MEDICINE
2019 - 2020

ACKNOWLEDGMENTS

DONE BY:

SALEH MAHJOUR

YAZEED AL-DOSSARE



ANSWERS

S1

To evaluate the association between use of group of medicinal drugs (benzodiazepines) used for treating anxiety and /or insomnia in adults and incidence of dementia.

1. What is the type of your assigned study? Give reasons.
2. Is it feasible? (remember F in FINER)
3. State two advantages/ strengths and two disadvantages/limitations of the study design.
4. Construct the study question.
5. What is the measure of disease frequency/association that can be obtained from this study?

1. **Answer:**
Prospective Cohort.
Because, we want to evaluate the association between the "exposure" and "outcome". Although the outcome didn't develop yet, there is comparison.
2. **Answer:**
Feasible.
3. **Answer:**
Advantage:
 - ★ we can measure the incidence of dementia.
 - ★ Demonstrate direction of causality.Disadvantage:
 - ★ Maybe the patient is not compliant.
 - ★ Time consuming.
4. **Answer:**
Among adults who have anxiety and/or insomnia and using (Benzodiazepines) as the treating medicine, what is the risk of developing dementia ?
5. **Answer:**
Relative risk (RR), Attributable risk (AR), and Incidence rate.

ANSWERS

S2

To determine the risk factors for hip fractures in post-menopausal women (e.g. osteoporosis, obesity, Hip Injury, and Physical inactivity)

1. What is the type of your assigned study? Give reasons.
2. Is it feasible? (remember F in FINER)
3. State two advantages/ strengths and two disadvantages/limitations of the study design.
4. Construct the study question.
5. What is the measure of disease frequency/association that can be obtained from this study?

1. **Answer:**
Case Control,
Because: multiple risk factors, start with outcome.
2. **Answer:**
feasible.
3. **Answer:**
Advantage:
★ quick.
★ inexpensive.
Disadvantage:
insufficient for rare exposure and many bias
4. **Answer:**
Among post-menopausal women in riyadh, what are the risk factors for hip fractures?
5. **Answer:**
odds ratio

ANSWERS

S3

What is the prevalence of hypertension in adults > 30 years of age living in Riyadh Central Region?

1. What is the type of your assigned study? Give reasons.
2. Is it feasible? (remember F in FINER)
3. State two advantages/ strengths and two disadvantages/limitations of the study design.
4. Construct the study question.
5. What is the measure of disease frequency/association that can be obtained from this study?

1. **Answer:**

Cross-Sectional (SURVEY)

Because:

- ★ Question asked about prevalence.
- ★ snapshot.
- ★ no comparisons.
- ★ Chronic condition with long duration of expression.

2. **Answer:**

Yes, hypertension is prevalent+ well understood by clinicia.

3. **Answer:**

Advantages:

- ★ Quick.
- ★ Cheap.

Disadvantages:

- ★ not for diseases with short period.
- ★ not for rare disease.

4. **Answer:**

Among adults who are aged >30 years and living in riyadh, What is the prevalence of hypertension in 2019 ?

5. **Answer:**

Prevalence.

ANSWERS

S4

Investigating that caesarean-section delivery may reduce the risk of mother-to-child transmission of HIV infection in comparison with vaginal delivery.

1. What is the type of your assigned study? Give reasons.
2. Is it feasible? (remember F in FINER)
3. State two advantages/ strengths and two disadvantages/limitations of the study design.
4. Construct the study question.
5. What is the measure of disease frequency/association that can be obtained from this study?

1. Answer:

Experimental/clinical trial RCT.

because:

Risk and comparison are key words to cohort study and RCT,

- ★ you are seeing if the new intervention (C-section) will reduce the risk Compared to other old delivery method (vaginal delivery).
- ★ the individuals are randomly allocated.

2. Answer:

Yes.

3. Answer:

Advantages:

- ★ there is one treatment is directly compared to another to establish superiority.
- ★ RCT is the strongest empirical evidence of treatment/intervention efficacy.

Disadvantage:

- ★ expensive and require high resource
- ★ due to ethical implications .

4. Answer:

Among pregnant females patients in KKHU, Did C-section delivery reduced the risk of HIV transmission into their children compared to normal vaginal delivery in 2019 ?

5. Answer:

Relative risk.

ANSWERS

S5

Football coach has observed that recently that number of disabling injuries on the play ground has increased compared to the past durations. He is suspicious and wants to investigate what medicinal/nutritional supplements are being used by the players during past three months. He discusses this with sports doctor who examine all injuries occurring on the field. How can you help him design a study?

1. What is the type of your assigned study? Give reasons.
2. Is it feasible? (remember F in FINER)
3. State two advantages/ strengths and two disadvantages/limitations of the study design.
4. Construct the study question.
5. What is the measure of disease frequency/association that can be obtained from this study?

1. **Answer:**
Retrospective Cohort.
Because:
the investigator was suspicious about the exposure
2. **Answer:**
Yes.
3. **Answer:**
Advantages:
 - ★ incidence, can be calculated.
 - ★ it provides a direct estimate of relative risk.Disadvantages:
 - ★ large number of people
 - ★ it needs long time to complete the study and obtain.
4. **Answer:**
Among football players, what are the risk of having playground injuries if using supplements ?
5. **Answer:**
Relative risk (RR), Attributable risk (AR), and Incidence rate.

ANSWERS

S6

In-charge of social organization wants to study emotional trauma in social workers who work with battered women. She has a validated scale/tool that can assess emotional trauma in workers. You are consulted; explain how will you design the study?

1. What is the type of your assigned study? Give reasons.
2. Is it feasible? (remember F in FINER)
3. State two advantages/ strengths and two disadvantages/limitations of the study design.
4. Construct the study question.
5. What is the measure of disease frequency/association that can be obtained from this study?

1. **Answer:**

Cross-Sectional, exposure and outcome at the same time.

2. **Answer:**

feasible.

3. **Answer:**

Advantage:

★ cheap,quick,.

★ simple,no argument.

Disadvantage:

★ insufficient for rare outcome.

★ not good for rare diseases.

4. **Answer:**

Among social workers who work with battered women, what is the prevalence of emotional trauma in 2019 ?

5. **Answer:**

odds ratio.

ANSWERS

S7

You are working in a TB center. You want to describe the characteristics and contact history of cases with drug resistant TB. How will you design the study?

1. What is the type of your assigned study? Give reasons.
2. Is it feasible? (remember F in FINER)
3. State two advantages/ strengths and two disadvantages/limitations of the study design.
4. Construct the study question.
5. What is the measure of disease frequency/association that can be obtained from this study?

1. **Answer:**
Case Series,
because: there are many cases, and we want to describe the characteristics.
2. **Answer:**
feasible, because we work at the centre and have access to files
3. **Answer:**
Advantage:
 - ★ useful for hypothesis generation.
 - ★ informative for rare diseases.Disadvantage:
 - ★ can't study causes and relations.
 - ★ can't assess measurement.
4. **Answer:**
Among cases of drug resistant TB in a TB center, what are the characteristic and contact history?
5. **Answer:**
frequency measurement on the characteristic only.

ANSWERS

S8

Representative sample of residents were telephoned and asked how much they exercise each week and whether they currently have (have ever been diagnosed with) heart disease.

1. What is the type of your assigned study? Give reasons.
2. Is it feasible? (remember F in FINER)
3. State two advantages/ strengths and two disadvantages/limitations of the study design.
4. Construct the study question.
5. What is the measure of disease frequency/association that can be obtained from this study?

1. **Answer:**
Cross-Sectional,
Because: the exposure and the outcome are measured at the same time
2. **Answer:**
feasible.
3. **Answer:**
Advantage:
 - ★ cheap, simple.
 - ★ ethical.Disadvantage:
 - ★ suitable to biases.
 - ★ bad in measuring the relationship between the exposure and the outcome temporality.
4. **Answer:**
Among resident, does exercise weekly decrease the chance of having heart disease?
5. **Answer:**
Prevalence and Odds ratio

ANSWERS

S9

Occurrence of cancer was identified between April 1991 and July 2002 for 50,000 troops who served in the first Gulf War (ended April 1991) and 50,000 troops who served elsewhere during the same period.

1. What is the type of your assigned study? Give reasons.
2. Is it feasible? (remember F in FINER)
3. State two advantages/ strengths and two disadvantages/limitations of the study design.
4. Construct the study question.
5. What is the measure of disease frequency/association that can be obtained from this study?

1. **Answer:**
Retrospective Cohort study.
Because: comparison between two groups, (occurrence) is a key word of incidence.
2. **Answer:**
feasible, large sample, the time in the past, and not expensive.
3. **Answer:**
Advantage:
 - ★ good to investigate the exposure.
 - ★ good to evaluate the incidence.Disadvantage:
 - ★ there a big chance for the confounding.
 - ★ poor choice for the clear outcome.
4. **Answer:**
Among troops who served in the first Gulf War, what is the incidence of having cancer between April 1991 and July 2002 compared to troops who served elsewhere during the same time?
5. **Answer:**
Incidence, Relative risk.

ANSWERS

S10

Subjects were children enrolled in a health maintenance organization. At 2 months, each child was randomly given one of two types of a new vaccine against rotavirus infection. Parents were called by a nurse two weeks later and asked whether the children had experienced any of a list of side-effects.

1. What is the type of your assigned study? Give reasons.
2. Is it feasible? (remember F in FINER)
3. State two advantages/ strengths and two disadvantages/limitations of the study design.
4. Construct the study question.
5. What is the measure of disease frequency/association that can be obtained from this study?

1. **Answer:**

Experimental study RCT.

- ★ the vaccine was given by the investigator.
- ★ randomly selected.

2. **Answer:**

yes, if we have a large budget . if we don't switch to cohort

3. **Answer:**

Advantage:

the highest level of evidence, we can determine causality, we can compare between both medications.

Disadvantage:

- ★ Ethical problems.
- ★ expensive.

4. **Answer:**

Among 2 month old child, what is the difference between vaccine A and vaccine B in terms of side-effect?

5. **Answer:**

Incidence rate, Risk Ratio.

ANSWERS

S11

A population-based study determined whether there is a relationship between childhood asthma and environmental exposure to second hand smoke. A sample of the population was interviewed to gather information about asthma symptoms and some environmental exposures in 2003.

1. What is the type of your assigned study? Give reasons.
2. Is it feasible? (remember F in FINER)
3. State two advantages/ strengths and two disadvantages/limitations of the study design.
4. Construct the study question.
5. What is the measure of disease frequency/association that can be obtained from this study?

1. **Answer:**
Cross-Sectional,
Because: we want to investigate the association between the exposure and the outcome
2. **Answer:**
feasible, exposure and the outcome are common
3. **Answer:**
Advantage:
 - ★ it is a snapshot study when we get all the information that we need in the same time
 - ★ cheap.Disadvantage:
 - ★ no causality.
 - ★ recall bias.
4. **Answer:**
Among a population, does the exposure to environmental second-hand smoke increase the chance of developing childhood asthma in the year 2003?
5. **Answer:**
Odds ratio