

Practice Assignment: Observational Studies

Questions 1–5: Consider each given description and decide whether it applies to an experimental study, an observational study, or both. Place an “x” in the appropriate column.

	Experimental Study	Observational Study
1) A treatment is assigned	x	
2) Used to investigate cause and effect	x	
3) Random assignment of participants to groups	x	
4) Used to investigate an association		x
5) Used to generalize to a population	x	x

Answer: Noted above in red.

Questions 6–8: Determine whether the described study is an experimental or observational study.

- 6) A researcher wants to investigate how amount of exercise is related to cholesterol levels. She interviews 100 people about their exercise habits and measures their cholesterol. She then divides the participants into a high exercise group and a low exercise group.

Answer: Observational study

- 7) A researcher wants to investigate how amount of exercise impacts cholesterol. She randomly assigns 50 participants to a rigorous exercise program for a month. She has the other 50 participants refrain from exercise. She measures the cholesterol levels before and after for each participant.

Answer: Experimental study

- 8) A study is done to compare the birth weights of babies born to women who were non-smokers and babies born to women who were smokers.

Answer: **Observational study**

Questions 9 and 10: Consider the observational studies and identify potential confounding variables.

- 9) In a study of 1,000 people, it was determined that lack of exercise over a two-month period is associated with, on average, a five-pound weight gain.

Answers will vary.

Sample answer: **Age, diet, gender**

- 10) A study of 500 people who self-identify as excessive drinkers showed that 70% of them had been diagnosed with lung cancer.

Answers will vary.

Sample answer: **Smoking is often included with excessive drinking**

In the following question, decide whether the researchers' conclusion is appropriate given their study design. Remember that a well-designed experiment allows the researcher to make a cause-and-effect statement, and an observational study only allows the researcher to show association.

- 11) The local health authorities were testing the short-term effectiveness of the Covid-19 vaccines using a vaccinated and a non-vaccinated group. They randomly selected 50 patients that received the vaccine and randomly selected 50 local residents that had not been vaccinated. They tested the patients weekly for eight weeks to see if they contracted the virus and compared the virus rate for each group. The researchers claimed that the vaccine caused a lower COVID-19 rate.

Did the researcher make a valid conclusion? Why or why not? If not, rewrite the conclusion to be accurate.

Answer: **No**

Rewrites will vary.

Sample rewrite: **There was no random assignment to groups, and it was not a causal conclusion. The vaccine is associated with lower disease rates.**