Exercise walk-through

26.1
Epidemiology and clinical evidence: evidence and transfer

GRE · GRE Subject Test · GRE Psychology

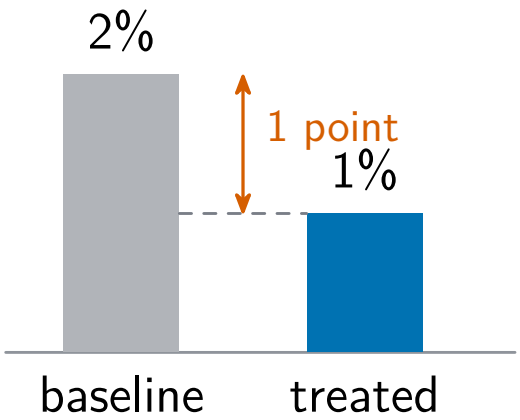
Incidence and prevalence

- Incidence counts new cases in a period. Cumulative incidence divides by the number of people at risk at the start; an incidence rate divides by person-time at risk.
- Prevalence counts all existing cases at one time, divided by the population then.
- Long-lasting conditions can have low incidence and high prevalence. A short outbreak can have high incidence and low prevalence.
- Compare rates, not raw counts, when populations differ in size.

Risk

- Relative risk reduction compares the treated risk with the baseline: 2% to 1% is a 50% reduction.
- Absolute risk reduction is the difference: 2% to 1% is 1 percentage point.
- The **number needed to treat** is 1 divided by the absolute reduction: here 100.
- A relative figure means little without the baseline risk and the follow-up time.

Figure: Risk



relative: half the risk, a 50% reduction
absolute: 1 percentage point

- Relative and absolute reductions tell different stories.
- Match each part of the diagram to the text.

Exercises 2.1–2.2

2.1 A researcher counts the number of new schizophrenia diagnoses in a country during the past year. This statistic is the: [1]

A. prevalence B. incidence C. morbidity ratio D. base rate E. lethality

2.2 Which design follows exposed and unexposed groups forward in time to see who develops the outcome? [1]

A. case report B. case-control study C. cohort study D. cross-sectional survey E. meta-analysis

Exercises 2.1·2.2

2.1 A researcher counts the number of new schizophrenia diagnoses in a country during the past year. This statistic is the: [1]

A. prevalence B. incidence C. morbidity ratio D. base rate E. lethality

2.1 Answer: B. New cases in a period are incidence; all existing cases would be prevalence. The other options do not satisfy the stated defining conditions.

2.2 Which design follows exposed and unexposed groups forward in time to see who develops the outcome? [1]

A. case report B. case-control study C. cohort study D. cross-sectional survey E. meta-analysis

2.2 Answer: C. Cohort designs move forward from exposure to outcome; case-control designs look backward. Compare the exact process, design or evidence, rather than an associated keyword.

Exercises 2.3·3.1

2.3 Revisit the worked case. State one conclusion its evidence supports and one stronger conclusion it does not support. Explain the difference. [2]

3.1 A fictional trial's risks over the same period are 4% in control and 3% in treatment. Compute relative and absolute reduction and NNT, then qualify. Give the interpretation, supporting reasoning, a relevant alternative or limitation, and an appropriate check. [4]

Exercises 2.3·3.1

2.3 Revisit the worked case. State one conclusion its evidence supports and one stronger conclusion it does not support. Explain the difference. [2]

2.3 Use the worked case evidence to support a bounded claim and explain why a causal, universal or stronger claim needs additional evidence. The claim must fit the specific design and observed process.

3.1 A fictional trial's risks over the same period are 4% in control and 3% in treatment. Compute relative and absolute reduction and NNT, then qualify. Give the interpretation, supporting reasoning, a relevant alternative or limitation, and an appropriate check. [4]

3.1 Absolute risk reduction=control risk−treatment risk=.04−.03=.01, or 1 percentage point. Relative risk reduction=absolute reduction/control risk=.01/.04=.25, or 25%. NNT=1/absolute reduction=1/.01=100 over the stated follow-up. These point estimates need uncertainty, harms and trial-quality review; they do not supply personal advice. Award B1 each (authored) for the interpretation, its reasoning, a relevant limitation/alternative and an appropriate check, up to four points. Accept a different justified answer satisfying these demands.