Cohort and Case-Control Studies

Thomas Klee
University of Hong Kong

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Cohort study

Study design

Follows a group of people (a cohort) to examine how different events (or risks) affect them; outcomes of people in subgroups of the cohort are compared.

Usually prospective, but can be retrospective (see Ajetunmobi, 2002, pp. 118–120)

Longitudinal; observational (non-experimental)

Example

Smokers and non-smokers were followed over time to determine whether they differ in health outcomes (e.g. lung cancer) (Doll & Hill, 1956).

Outcome measure

Relative risk (RR) is "a ratio comparing the probability of an outcome in those exposed with the probability of that outcome in those unexposed" (Ajetunmobi, 2002, p. 107). See the table on the next page for how this equation is applied to a 2 x 2 outcome table.

$$RR = \frac{a/(a+b)}{c/(c+d)}$$

Interpretation

$RR < 1$ Decreased risk

$RR = 1$ No difference in risk

$RR > 1$ Increased risk

RR can be estimated directly in a cohort study.

Case-control study

Study design

Two groups (cases and controls) are examined for differences associated with case status.

Usually retrospective, observational, non-experimental

Examples

Children with and with specific language impairment were compared on a variety of factors using a parent questionnaire (Tomblin, Smith, & Zhang, 1997).

Late talkers and typically-developing toddlers were compared on a range of maternal, family and child variables (Zubrick, Taylor, Rice, & Slegers, 2007).

Outcome measure

The ODDS RATIO (OR) is defined as "the ratio of the odds of an event occurring in the experimental group (*cases*) compared with the odds of the same event in the *control* group" (Ajetunmobi, 2002, pp. 117–8). See the table below for how this equation relates to a 2 x 2 table.

$$OR = \frac{a/b}{c/d} = \frac{a/c}{b/d} = \frac{ad}{bc}$$

Interpretation

$OR < 1$ suggests exposure reduces outcome

$OR = 1$ suggests exposure has no effect

$OR > 1$ suggests exposure increases outcome

OR can be used to estimate relative risk in a case-control study (Bland, 2000, p. 241).

2 x 2 outcome table

		Case	Control
Predictor	+	a	b
Predictor	−	c	d

References

Ajetunmobi, O. (2002). *Making sense of critical appraisal*. London: Hodder Arnold.

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