Critical Appraisal: Terms and Definitions

Validity: Is this finding true?

Generalisability: Is this finding applicable elsewhere?

Chance: Random error – source of imprecision

Bias: Systematic error – source of inaccuracy

Confounding: Apparent association actually due to an unmeasured factor

Efficacy: How well an intervention performs under ideal conditions

Effectiveness: How well an intervention performs under normal conditions

Pragmatic research: Does a treatment/test work in normal practice

Exploratory research: How well a treatment/test works in specific circumstances

P value: How likely the observed results are to have occurred by chance, if the null hypothesis is true

95% confidence level: Range of values which has a 95% probability of encompassing the true value

Type I error: Incorrectly reject null hypothesis. Probability of this occurring is α

Type II error: Incorrectly accept null hypothesis. Probability of this occurring is β.

Power: $1- \beta$

Multiple hypothesis testing – increases risk of getting a false positive result by chance (at least one type I error)

Randomisation: Allocation to group by random process. May reduce confounders but will not necessarily eliminate allocation bias

Allocation concealment: Randomisation decision not made until after patient is enrolled in study. Eliminates allocation bias.

Blinding: Can apply to patients, those providing care, those measuring outcomes.

Intention to treat: Analyse by allocated group, regardless of whether treatment was completed in this group

Hawthorne effect: People change their behaviour when they believe they are being observed.

Work-up bias: Test under investigation influences which reference standard is used; tends to overestimate sensitivity

Incorporation bias: Test under investigation also forms part of reference standard; tends to overestimate specificity

If prevalence of disease is high, suggests a highly selected population

Kappa score: Measure of inter-observer reliability (0 is no better than chance, 1 is perfect agreement)

Case positive: An individual with the disease of interest, ie, the reference standard is positive.

Case negative: An individual without the disease of interest, ie, the reference standard is negative.

Test positive: An individual with a positive result for the diagnostic test under investigation.

Test negative: An individual with a negative result for the diagnostic test under investigation.

Prevalence: The proportion of the population with the condition of interest.

True positives: Patients correctly identified by the diagnostic test as having the disease.

True negatives: Patients correctly identified by the diagnostic test as not having the disease.

False positives: Patients without the disease who are incorrectly labelled by the diagnostic test as having the disease.

False negatives: Patients with the disease who are incorrectly labelled by the diagnostic test as not having the disease.

Sensitivity: The proportion of patients with the disease who are correctly identified by the test; TP/(TP+FN)

Specificity: The proportion of patients without the disease who are correctly identified by the test; TN/(TN+FP)

Positive predictive value: The proportion of patients with a positive test who genuinely have the disease; TP/(TP+FP)

Negative predictive value: The proportion of patients with a negative test who genuinely do not have the disease; TN/(TN+FN)

Likelihood ratio: Varies 0 to infinity; values greater than one means the result increases likelihood of suspected diagnosis. Generally taken that <0.1 and >10 rule out/rule in the condition.

LR+ = Sensitivity/(1-Specificity)

LR- = (1-Sensitivity)/Specificity