原文題目(出處)：	Which is the correct statistical test to use? Br J Oral & Maxillofac Surg 2008;46:38–41
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報告日期：	**97/12/19**

內文：

● **Introduction:**

Choosing the appropriate statistical test:
   1. To decide what scale of measurement your data is.
   2. Consider the analysis required

● **Three main type of scales of measurement**
   1. Nominal: categories but no order. Ex: sex, marital status, location of lesion.
   2. Ordinal: ordered categories. Ex: pain, stage of tumor.
   3. Interval: including age (years), weight (kg) or length of osteotomy (cm).

● **Parametric assumptions**

✓ Examine the distribution of interval-scale data to check if they are normally distributed→bell-shaped, symmetrical about the mean.
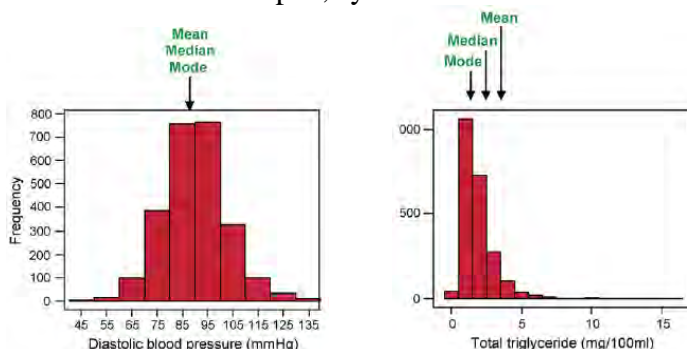
✓ normality tests: Kolmogorov–Smirnov and Shapiro–Wilks.

● **Comparison of two groups**

Selecting the appropriate test for comparisons between two groups

Scale of measurement	Independent samples	Paired samples
Interval scale (parametric assumptions satisfied)	Independent samples t-test	Paired samples t-test
Ordinal scale or interval scale (parametric assumptions not satisfied)	Mann–Whitney U-test	Wilcoxon signed rank test
Nominal scale		
Two categories	χ^2-Test for 2×2 table	McNemar's test
C categories (C>2)	χ^2-Test for $2 \times C$ table	–

A. two independent groups

   (1) Independent samples t-test →compare sample means from two independent groups for an interval-scale

   (2) Mann–Whitney U-test →compare two independent samples when data are either interval scale but assumptions for t-test (normality) are not satisfied, or ordinal (ranked) scale.

   (3) Chi-square ($\chi2$) test→ compare proportions between two or more independent

groups or investigate if there is any association between two nominal-scale variables.

B. two paired groups

 (1) Paired samples t-test →compare two sample means where there is a one-to-one correspondence (or pairing) between the samples.

 (2) Wilcoxon signed rank test →compare two paired samples when data are either interval scale but assumptions or the paired t-test (normality of within-pair differences) are not satisfied or ordinal (ranked) scale.

 (3) McNemar's test →compare two paired samples when the data are nominal and dichotomous.

● **Comparisons of more than two groups**

Selecting the appropriate test for comparisons between more than two groups

Scale of measurement	Independent samples	Paired samples
Interval scale (parametric assumptions satisfied)	One-way ANOVA	Repeated measures analysis of variance
Ordinal scale or interval scale (parametric assumptions not satisfied)	Kruskal–Wallis one-way ANOVA	Friedman's test
Nominal scale	χ^2-Test for RXC table	Cochran's Q

A. independent groups

(1) One-way analysis of variance (ANOVA) →more than two independent groups being
Compared if the parametric assumptions are satisfied.

(2) Kruskal–Wallis one-way ANOVA →used for ordinal data, or an interval-scale variable, which are not normally distributed.

(3) Chi-square (χ2) test → used for nominal data.

B. paired/related groups

(1) Repeated-measures analysis of variance →used if the parametric assumptions are satisfied.

(2) Friedman's test →used for ordinal data or an interval-scale variable that is not normally distributed.

(3) Cochran's Q-test →used for nominal dichotomous data when there re more than two related groups.

● **Association between two interval or ordinal variables**

✓ **correlation coefficient** is used to investigate the association between two interval or ordinal variables.

1. **Pearson's product-moment correlation coefficient** is used for both variables are interval and approximately normally distributed.

2. **Spearman's rank correlation** is used for either variable is ordinal or interval and skewedcoefficient.

✓ **multiple regression** analysis with an interval-scale response (dependent) variable and several
predictor (independent) variables.

✓ **Logistic regression** is used when the response variable is dichotomous.

● **Power, P values, and percentages**

✓ Make a sample size calculation so that the study will have sufficient power to detect significant difference.

- ✓ It is often necessary to <u>combine categories</u> so that there are sufficient numbers in each group.
- ✓ It is essential to also <u>quote the numerator and/or the denominator</u> so that it is clear how the percentage has been calculated.
- ✓ A significance level (P value) is considered significant if it is <u>less than 0.05</u>.

題號	題目
1	比較不同種族之間得到鐮刀型貧血的統計方法中,樣本的分類是屬於: (A)Nominal (B)Ordinal (C)Interval (D)none of above
答案(A)	出處:
題號	題目
2	在統計學上,P值須在何種範圍內才可被認為是顯著的結果
	(A)<0.05 (B)<0.5 (C)0.5~1 (D)>1
答案(A)	出處: