

STATISTICAL ANALYSIS

Data were analyzed using Minitab Statistical software version 12 (1998)

Categorical data were expressed as frequencies whereas quantitative data were expressed as mean \pm standard deviation (SD). To assess the statistical significance of differences between the different studied groups, the following tests of significance were used according to the situation where:

- Chi-square test of association was used for categorical variables
- Unpaired student's t-test was used to compare quantitative variables
- Paired student's t-test was used to compare matched paired data.
- ANOVA test (F-test) was used for comparison of more than two groups.

The differences between groups were considered statistically significant (S) at the level of $p \leq 0.05$ and nonsignificant (NS) at the level of $p > 0.05$.

The following mathematical equations were the basis of the used statistical tests:

$$\text{Mean } (\bar{X}) = \frac{\sum X}{N}$$

$$\text{SD} = \frac{\sqrt{\frac{\sum X^2 - (\sum X)^2}{n}}}{n-1}$$

$$t = \frac{\bar{X}_A - \bar{X}_B}{s.e. \bar{X}_A - \bar{X}_B}$$

Where

\bar{x}_A = the mean of group A

\bar{x}_B = the mean of group B

$s.e._{X_A - X_B}$ = standard error of the difference between the mean of group A and that of group B.

$$\text{Paired t-statistic} = \frac{\bar{d}}{s.e.\bar{d}}$$

Where :

$$s.e.\bar{d} = s_d / \sqrt{n}$$

\bar{d} = The observed mean difference between the two dependent groups.

$s.e.\bar{d}$ = Standard error of the observed mean difference between the two groups.

s_d = Standard deviation of the difference.

n = The number of matched pairs in the two groups.

$$\chi^2 = \sum \frac{(O - E)^2}{E}$$

χ^2 = Chi-square

\sum = Sum

O = Observed

E = Expected