Statistics - practical considerations

Estatística - Considerações Práticas

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To transform a good research topic into a statistically reliable result requires some important steps to be taken. Being able to identify whether a study is of good quality is beyond trusting the journal where it is published or the organizations/authors behind it.

The use of inappropriate tools generates errors that can lead to a false result and discussion.

Furthermore, trusting that a software will be able to judge the best analysis option also places the researchers in a vulnerable position. Statistics, in order to be used adequately, need to be in tune with the practical understanding on the addressed subject/topic, something a software cannot do.

One of the important points to be considered concerns the population to be assessed. A "large" sample is not synonymous of a reliable sample. In addition to the sample size calculation - which is an extremely relevant step - collecting data on participants who really represent the target population, regarding its main characteristics, is essential. For example, if a given disease affects 60% of women in the population, the sample has to be composed of 60% of women so that its results actually reflect the studied population.

Another important aspect concerns data distribution[1,2]. One of the characteristics of statistical normality is the proximity between mean and median results. On the other hand, non-normal data have very different means and medians. That said, a study with non-normal data should not use the mean as a reliable reference.

Statistics is a powerful tool and needs to be used carefully. Therefore, choose what to use and when to use it; this has to be carried out in order to understand the objectives of the study, the main outcome and all the involved variables. An incorrect analysis can lead to wrong conclusions and in many cases motivate misconduct[3].

Obviously, it is not only statistics that will dictate how clinical practice should be addressed, but we need to ensure statistics is performed with responsibility, and with the lowest incidence of potential methodological errors. Understanding statistics allows a deeper judgment about the results and can be both an incentive or a demotivator to adopt in clinical practice the study derived results.

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