

Statistical Advice to Authors

Statistical methods are very much part of the research methodology and should be reported as thoroughly as other aspects of the methodology so as to enable a reader to replicate the work.

Unless one or more of the authors are statisticians, then consult a statistician or a good textbook (e.g. *Biostatistical Analysis* by Jerrold H. Zar).

If results of your study are evaluated using statistical methods, take the following into account:

1. The rationale behind the testing should always be presented and comparisons clearly identified.
2. Statistics used should be named and applicability of each test should be given.
3. It should be proven that the data can be tested with the tests used (e.g. normality should be tested).
4. If some data are excluded from the analyses it should be explained why.
5. Sample sizes (n) and their calculation should always be given.
6. Numbers after a '±' sign should be identified (e.g. SE, SD or CI).
7. Merely labelling differences as significant (including such labels as < 0.05 , *, etc.) without indicating test results (test value) and sample sizes (or degrees of freedom) is not acceptable.
8. p values should be presented to a reasonable number of decimal places (usually three or four); true values rather than thresholds (0.05, 0.01, 0.001) should be given.
9. Please note that statistical significance does not indicate the strength of a correlation. In fact, the statistical significance testing of the correlation does not provide any information about the strength of the relationship. Thus, achieving a value of $p = 0.001$, for example, does not mean that the relationship is stronger than if you achieved a value of $p = 0.04$. If you set $\alpha = 0.05$ then achieving a statistically significant correlation means that you can be sure that there is less than a 5% chance that the strength of the relationship you found (correlation coefficient) happened by chance.
10. Certain words such as 'random', 'significant', and 'correlation' should only be used in the context of statistical analyses.
11. Percentages should only be presented as a summary following the numbers that generate them. There is often little value in giving the percentage when the denominator is small (e.g. smaller than 20).
12. If complex statistical models are being employed, then some justification of the model choice may be required, including information regarding the model fit of this and other credible models. This may not be appropriate for the paper (except perhaps in summary), but additional material may be usefully submitted.
13. The perfect piece of research is non-existent, with all designs having to compromise between competing requirements. The paper should discuss potential weaknesses and or biases in the design, conduct, and analysis.