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TIPS FOR THESIS WRITING AND PREPARING RESEARCH PAPERS

For an updated version, see
Basic Methods of Medical Research, Fourth Edition
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Writing DISCUSSION

Discussion section is a sapient exercise in logic, brevity, and clarity. Generally, this is the most useful part of a report that helps readers to understand the implication of the findings. It places findings in the context of clinical practice and health care. It also elaborates how the results fit into the larger theory you initially proposed. Such focus remains the core of the Discussion section. The language must be clear and unambiguous. It should have clear link with Introduction.

Begin the discussion with medical context and then bring in the findings and their medical significance. If the research is on expected lines, explain the need to carry out the investigation in the first place. Recapitulate the main findings without repeating the data. Instead of restating the findings, emphasize on operative part of these findings. Emphasise the

new and important findings and the conclusions without exaggerating. Explain the mechanism how these conclusions emerge from the data you have presented. Discuss how the results support or do not support original hypothesis. Do not introduce new result in Discussion section. Explain how the statistical significance of your results might be real and not due to errors of measurements, confounding factors, or other biases. Discuss the statistically not significant results also if they are interesting. State about them also how they fit into biological plausibility. Relate them to the objectives of the study. If the effect of your intervention is small, explain how this might still be valid. Establish reliability of new findings so that there is no suspicion. Discuss robustness of results to minor variation in the underlying procedures. Defend the design of the study but do not feel shy of describing limitations and shortcomings. No research is without limitations. Remain alive to the epistemic gaps. Thus say what you what you really want to say about the results of your study on the basis of credible evidence.

Compare your results with those of other researchers, particularly of known or respectable groups working on that topic. Use tables and graphs in discussion section only if really helpful in achieving clarity. Resolve any conflict by providing credible reasons. Argue out why your results are convincing. Integrate them with present knowledge. When relevant to your work, gently but firmly indicate the deficiencies in the work of others such as their faulty design, inadequate analysis, and wrong interpretation.

In case there is any accidental finding, explain how it may have arisen. Put forth a new hypothesis if it looks plausible. Lateral thinking out of the box is always an asset.

Argumentation in Discussion can be exciting both for the authors as well for the readers. To the readers, it allows to grasp the real relevance and utility of results in medical care, health policies, or evaluation programmes (Jenicek 2006). To the authors, discussion sometimes helps to rediscover the intricacies of the phenomenon that were possibly obscure earlier. Thus an argumentative discussion can be useful exercise. See Jenicek (2006) for details of how to write Discussion section in medical articles and what it should contain. The same principles apply to the thesis and bigger reports as well—just in more detail.

Produce a succinct conclusion and discuss its generalisability. It must be a warranted conclusion based on the evidence discussed earlier in the report. Link it to the objective of the study. Justification of conclusions should be fully articulated. Do not overinterpret the results and give full consideration to the multiplicity of analyses, findings of others and limitations of your study. Distinguish between statistical result and scientific conclusion. The latter considers other evidence – medical context, biological plausibility, present knowledge, clinical experience, etc. Statistical terms such as odds ratio, confidence interval, regression coefficient and P-value are not directly interpretable for application in medical practice. They need to be transformed to everyday medical language that a practitioner can understand. Remember that ultimate users of your research are practitioners who deal with healthy and unhealthy people.

Very clearly state how does the study adds to the present knowledge, or how the results have contributed to the progress of science. Describe future perspective without being arrogant. For practical implication, include recommendations where appropriate. For interventions, for example, the conclusion could be that it is sufficiently effective, or that it is promising but requires further investigation, or that the evidence lacks that it is effective. The conclusion may also highlight the trade-offs between benefits and adverse effects. The benefits could be in terms of better efficacy or in terms of reduced cost or increased convenience. Common errors in reaching conclusions are (i) interpreting lack of evidence for an effect as evidence of no effect, or

not statistically significant as not present, (ii) ignoring warning signs of negative effect, (iii) reaching beyond the evidence by imputing own judgment, and (iv) stating that more research is needed without specifying what specific research is needed and why.

Discussion chapter in a thesis should be divided into sub-headings so that disparate ideas on different sub-topics are not mixed. In a big report or a dissertation, a chapter may be devoted to each subtopic. In that case, results and discussion on that topic would be together in that chapter. Since critical thinking is more important than data in a doctoral dissertation, discussion section has very special place in a dissertation. Use this section to demonstrate that concepts are getting precedence because that is what is expected in a dissertation.

Whether a small paper or a big report, never mix comments with the facts. Opinions should be clearly stated as opinions.

Do not forget to mention the limitations of your study. No result has universal applicability. Failure to report limitations suggests arrogance, or that authors do not know about them. Your report should not give an iota of inkling that there is any attempt to mislead the reader.

REFERENCE

Jenicek M (2006). How to read, understand, and write 'Discussion' section in medical articles: an exercise in critical thinking. Med Sci Monitor 12:SR28-SR36.