Manuscript writing

The secret to writing the introduction and methods section of a manuscript

Journals expect scientific research papers to be written in the traditional format, which is often known as the IMRaD format (Introduction, Materials and methods, Results, and Discussion). Each of these sections serves a specific purpose, and I'll briefly describe what to include under each of these headings.

This post deals with writing the introduction and the materials and methods section. Authors should regard each of these sections as answers to specific questions, which will make it easy to use the sections effectively to communicate research.

Writing the introduction: The introduction answers the question W-H-Y.

Begin by describing the problem that you wanted to solve through the piece of research you are writing about. Explain why that problem is important. As Peter Medawar warns in his Advice to a Young Scientist, “the problem must be such that it matters what the answer is — whether to science generally or to mankind.” Next, briefly review what has been done so far to solve the problem. Finally, introduce the study by pointing out what is different about it compared to past research.

Writing the materials and methods section: The section on materials and methods answers the question H-O-W.

Include enough detail so that others can repeat the experiment if they wish to do so. Give sources of material, make and model of equipment, quantities, duration, reason, etc. All research is expected to be reproducible, which is why this section is particularly important. Describe what the “treatments” were and how you arranged for appropriate “controls” so that valid comparisons can be made between these two sets. Also, this is perhaps the easiest section to write, and it is a good idea to start your writing with this section.

Read the second part of this series to know how to write the Results and Discussion sections.

The secret to writing the results and discussion section of a manuscript

The first part of this post briefly described what to include in the introduction and materials and methods sections of a typical research paper written in the IMRaD format (Introduction, Materials and methods, Results, and Discussion). In this part, I'll discuss the results and discussion sections.

Writing the results section: The results section answers the question W-H-A-T.

State only the results; leave comments and explanations for the discussion section. Use tables and charts as appropriate, but do not duplicate the data by presenting the same data once as a table and once as a graph or by repeating the graphical data in the text. In theory, this section can be the shortest of the IMRaD sections because a lot of the information can be presented in tables and/or figures.

Writing the discussion section: The discussion section answers the most important question, namely, S-O W H A-T.

Explain what the results mean and how they are important. Compare the results with earlier findings; explain contradictory results, if any. If some results did not attain statistical significance, explain that any differences seen may have been due to chance. Outline the limitations of your study, and suggest a future line of work. Finally, sum up with a conclusion.

And there you have your manuscript neatly structured in IMRAD format!

http://www.editage.com/insights/the-secret-to-writing-the-results-and-discussion-section-of-a-manuscript