

AuthorAID in the Eastern Mediterranean
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A lot of practice is needed to write a good **Discussion** section (the “D” in the “IMRaD” structure). For many researchers, learning to write an excellent Discussion section is a life-long process, so be patient and keep trying. Your manuscripts will get better every time you write or revise one.

Readers want to learn something interesting from your Discussion section. In a sense, you and your coauthors are the world’s experts in the specific research topic you are reporting on in your paper, so readers expect you to teach them something new.

To help them, the content needs to be well chosen and well organized, just as in a well-planned classroom lesson. Your interpretation of the results needs to be persuasive so that readers will be convinced that your conclusions are logical and soundly based on your findings.

The Discussion section explains i) what your findings mean, and ii) why they are important. Explaining these complex notions clearly in writing takes practice and patience. You will probably need to rewrite, revise, rearrange, add, delete and emphasize or de-emphasize many things in the process of producing a good Discussion section.

Before you begin to write, it is important to check the journal’s Advice, Instructions or Guidelines for manuscript preparation to see if there are any specific instructions for the content, structure or length of the Discussion section.

In the Discussion, the information **progresses from specific** at the beginning (your findings and their reliability) **to general** (what your findings mean and how they contribute to knowledge in the research area). **The following sequence of information is seen in many Discussion sections:**

1. Brief summary of the most important findings, with emphasis on novel or unusual results

However, some journals do not begin the Discussion with a summary of the main results. Check the journal’s Advice, Instructions or Guidelines, or check a few recent articles.

2. Brief statement to characterize your results as novel, unusual, unexpected, intriguing, consistent with (or inconsistent with) earlier studies or current knowledge
3. Comparison of your results with earlier research. Suggest reasons for the similarities and differences, especially if the research area is new, controversial or rapidly developing.
4. Explanation of the possible mechanisms that led to your findings

5. Explanation of the implications your results have for further research, theory, clinical practice or policy as appropriate

6. Identification of the limitations and strengths of your study design and methods

7. Conclusions

- Answer the research question asked in the Introduction.
- Explain how the conclusions can be generalized, and how they should not be generalized.
- Suggest new studies that could provide the right kind of data to answer your research question, especially if your results provided only a partial answer or an unclear answer.

“Placing your research in the wider context”

This means explaining the implications of your results for the area of research in more general terms. Specific ways you can do this in the Discussion section are:

1. Noting the main similarities and differences with regard to earlier results
2. Suggesting reasons for differences
3. Explaining why you believe your results and interpretation are correct if your findings are controversial or different from most other studies
4. Explaining the implications of your results
 - for theory (mechanistic explanation, implications for basic science)
 - for practice (in the lab, in clinical practice, in the field, in populations)
 - for future research

Revising the Discussion section

Multiple changes and corrections are an entirely normal part of the writing process. Nobody, no matter how brilliant and no matter how wonderful their research results were, ever wrote a perfect Discussion section on their first try, even after years of experience.

While you write and revise the Discussion section, refer often to your research question or hypothesis (at the end of the Introduction section). This will remind you of the aim of the study and help you to stay focused on the novel, original, key results.

Usually, the first draft of the Discussion section it is much too long. You will need to revise it to shorten the text and make it more focused. The focus and “logical flow” or cohesion can be improved by eliminating information and references that are not related to your research question or to your main conclusions.

Other steps you can follow to revise and improve the Discussion section are:

1. Remove repetitions and redundancies
2. Use fewer words and simpler language

3. Make logical relationships and connections between ideas and concepts easy for readers to understand. While you write, don't forget that readers need a brief explanation for each logical step in your thinking, because they don't know everything that you already know about the specific research you are reporting.

4. Check every reference to make sure it is cited accurately and in the correct context

Remember not to permanently delete the sentences and paragraphs that are not needed. Save them in a different file. They may be useful later in responding to comments by the peer reviewers. Or they may be useful for another manuscript, a grant application, a blog posting or a personal communication with colleagues.

Conclusions

1. Relate your **conclusions** explicitly to the statement of the aims or objectives of the study at the end of the Introduction section.

2. Provide an answer the question you asked in the Introduction. This is what readers want to know when they reach the end of your article.

3. Base your conclusions carefully on the methods (strengths and limitations) and the evidence (data and discussion) you present in the article.

4. Don't exaggerate.

5. Don't claim "for the first time" unless you are completely sure.

6. If your findings are surprising, unexpected, or likely to be controversial, suggest possible explanations.

Common problems in the Discussion section

1. The text is too long. Maybe 20 or 50 words over the journal's word limit is acceptable provisionally, but 100 words or more over the word limit usually do not make a good impression, at least not in health science journals. (Social science journals may be somewhat more flexible.)

2. The Discussion is not focused on the aims of the study as explained at the end of the Introduction. No answer is provided to the research question asked at the end of the Introduction.

3. The section discusses some data that are not reported in the Results section.

4. The comparisons between your study and other studies sound like a shopping list, with no interpretation or explanation. "Our results were higher than ... but lower than ..., and similar to" Readers don't want a boring list of differences. They want to learn from you *why* there are similarities and differences between your data and those from other studies.

5. The section does not progress steadily from specific to general, i.e. from your own main results to wider considerations about your methods, the reliability of your findings, the meaning of your findings within the research area, and the possible implications of your findings for other researchers or practitioners.

6. There is no mention of the limitations and strengths of the study.

7. The conclusions contain extrapolation to broader contexts that are not addressed by the variables and experimental design of the study. Readers will not be convinced if you exaggerate the scope, importance or generalizability of the conclusions.

More guidance

Equator Network. <http://www.equator-network.org/>

The reporting checklists for randomized trials (CONSORT), observational studies (STROBE) and systematic reviews and metaanalyses (PRISMA) note that the Discussion section should include information about the “Limitations” (potential sources of bias and imprecision).

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