Global PaedSurg Research Training Fellowship



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**Writing a manuscript for publication**

**By:**

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# Learning objectives

## How to prepare a scientific manuscript:

1. Structure of a scientific manuscript
2. Order of preparation
3. Stakeholders
4. Writing style

NB: We may not always be successful with our scientific manuscripts as not a lot of people may have impaired concentration. Be concise, have a clear message focusing on the reader as you write.



Site: <https://www.nature.com/scitable/ebooks/english-communication-for-scientists-14053993/writing-scientific-papers-14239285/>



Kliewer MA. AJR 2005; 185:591.–596 2006

# Structure of a scientific manuscript

## Outline

* Title
* (Title page: Keywords)
* Abstract
* I-M-R-D [imrad]
* Conclusion
* (Acknowledgement)
* (References)
* Tables and Figures
* Supplementary material

## How readers will read your work

Order may differ but it may follow this route:

### First

* Title
* Abstract: first and last sentence
* The rest of the abstract
* Tables and figures
* If you have referenced them – Reference List

### Second

* Any methodological issues?
* Are they properly done?

### Then

* Introduction – results - discussion

## How writers write

### First

* Methods – really get a clear grasp on how you define your variables, results and exposure, shared vision among author team on what is to happen.
* Tables and figures

### Second

* Introduction
* Results

### Third

* Discussion
* Abstract
* Title
* Conclusion

# Title

* Attracts attention
* Meaningful at a PubMed screen
* Specific
* Reflect the content of the manuscript
* Sell or tell?
* Summarize the findings?
* Study design as a subtitle? [Via Title: Subtitle]

# Abstract

1. Lure the reader to read on
2. Prepare the reader for what is to come
* Wider audience than the rest of the manuscript
* Quite variable journal preferences (how many headings, how many words allowed)
* Introduction: State the context, need, task, objective
* Methods: Study design, outcome and exposure.
* Results: The *what* (Numbers, numbers, numbers)
* Conclusion: The *so what*. Reflect the objective. Perspectives?
* Introduction and conclusion – most important that should really attract attention of the reader.

# Introduction

* A rationale, the motivation indicating the importance of this paper.
* Prepare readers for the structure of the paper
* A funnel
* 3 paragraphs long

### 1st paragraph

* Big picture. Issue. Context.
* Orient the reader and establish importance
* Provide a compelling motivation
* Words from title in first sentence? Don’t be too general in the first sentence
* Anchor in time ( such as since the 1990s, or in paediatric surgery today), space or field?

### 2nd paragraph

* Narrow down from what is known ––- to what is needed (contradiction or next logical step)
* A gap-statement in the last sentence: *“However,…” or “Unfortunately,…”* Gap statements sets you up
* Rhetoric research question?
* Less is more. Only what will help readers understand the need, and its importance

### 3rd paragraph

* The task. What you have done.
* Start with *“To address this.., we developed…”. To establish the.., we investigated…”*
* The hypothesis
* The purpose and object – what you have done e.g. *“This paper describes…”* This clearly outline the contribution of the paper
* All this prepares the reader for what is to come.

# Methods

1. Prepares the reader mentally for the results section
2. (Constructive alignment for investigators)
3. Conveys a sense of quality
4. Sufficient detail for others to reproduce - for other researchers in the future.

### Advice

* Start sentences with the key word
* Be 100% consistent with nomenclature and order. Order to be the same as that in the tables.
* Repeat the structure of sentences. Very dry!
* If a paragraph is like a bullet point list in words – let the first sentence introduce and summarize.
* Use subheadings with methodological key-words

## Methods –subheading examples

The study design and setting – describe the setting of this study design

* Inclusion and exclusion criteria
	+ Perhaps also control group and censoring. Flow chart is very useful. Define the control group, describe how you treat missing variables and censoring.
* Primary outcome
	+ *“Primary outcome was x… X was defined as…”*
* Primary exposure
	+ *“Primary exposure was y”. Y was defined as…”*
* Independent variables and confounders – all other variables which are not exposure or outcome.
	+ *“Independent variables were [z and k]. Z was defined as… K was categorized…”*
* Data collection and validation
* Statistical analysis – how will you present the descriptive statistics; which tests you use; what level is your significance in this analysis.
* Ethical considerations

Results – usually written after table and figures are ready

### Style

* One paragraph per table/figure (in order of appearance)
* State the message of each paragraph in the first sentence
* Summarize each table/figure, but do not repeat all numbers
* No methods, no discussion, no references
* Focus on what was found, not that you found it
* Double-check alignment with methods
* Effect estimates with uncertainty
	+ Mean with [95% CI] - normal data
	+ Median with [a range] - non-normal data

# Tables and Figures

1. Illustrate major findings
2. Answer research questions and address study aim
3. Economy and advertisement

### “The Table 1” – present your material here

* Columns by exposure
* Are the groups comparable?
* Value of p-value?

### The other tables and figures

* Max 4. The rest will be supplementary material
* Figures > Tables
* One per research question or outcome
* Display outcome. Tables have columns by outcome

### Captions

* *Above* tables. *Below* Figures
* Key words first
* Try to align/answer research questions or study aim
* Comprehensive enough to speak for itself in a ppt

### Style

* Be creative, be clear
* Double-check consistency of terms and order
* Copy journal style
* Figures without 3D-effects and colour. No pie-charts
* Tables without grid and without units in cell

# Discussion

### Style

* Relative freedom (but adhere to journal style)
* I aim for six paragraphs, including conclusion
* Don’t lose your reader. Write clearly and briefly.
* Do not introduce new results
* Use subheadings (and then remove them)

Subheading Examples
1st paragraph

* “To get everyone on the same page”
* Mention the study design
* Claim that you have achieved the purpose e.g. *“In this controlled cohort study we have managed to ,…”*
* State the principle findings in one, max two sentences

2nd paragraph

* Advance from findings to interpretations – help reader to understand what the results actually mean
* Don’t understate the importance of your findings
* Don’t extrapolate beyond the evidence
* Stay on topic

### 3rd paragraph

* How your findings are congruent with current thinking and previous literature.
* Yes, one paragraph!! (or two if you have two main findings and don’t want to write two papers…)
* You don’t have to repeat everything from the 2nd paragraph of the introduction.

### 4th paragraph

* Articulate the clinical implications of your findings
* Explain how your findings illuminate larger issues
* Outline the scientific trajectory

5th paragraph – Limitations

* Let the readers understand the limits of your data and interpretations
* Be honest, thoughtful and self-critical without undermining the validity of your study, as you describe your weakness, remind readers of all the strengths.
* Try to mention strengths en passant as you present your weaknesses

### Conclusion

* 6th paragraph
* (In many journals this is a separate heading)
* The shorter the more impressive. Just a few sentences
* Do not restate what you have done or what the paper does
* Focus on what you have found and, especially, on what your findings mean
* Explain what is new without exaggerating
* Align with gap statement, research question, and study aim

# Author instructions

### Consensus formats

The EQUATOR network – <http://www.equatornetwork.org/>

### Journals

* JPS – <https://www.elsevier.com/journals/journal-ofpediatric-surgery/0022-3468/guide-for-authors>
* EJPS – <https://www.thieme.com/media/ita/pubid1467873712.pdf>
* Paediatrics –https://www.aappublications.org/content/pediatrics-authorguidelines
* JAMA paediatrics – <https://jamanetwork.com/journals/jamapediatrics/pages/instructions-for-authors>

# Consider your audience

### Your readers

* Value and usefulness
* Citations
* Reputation

### Your editors

* Citation potential, to increase impact factor: you have to sell your paper to make it easy to reference
* Space and time – can be limiting factors

### Your reviewers

* They read while multi-tasking; envision them with distraction such as social media, children etc.
* Give them what they want, when they want it
* You want them to love you (not to hate you) write simple and clear

# General advice on style

* Don’t end long sentences with important verbs
* Care about the bridge between sentences
* Start paragraphs with the message – then present the evidence to support the statement
* Start sentences with the name of the variable
* Readers don’t want to remember long pieces of text before knowing what to do with them
* 100% consistency of terminology and order
* Always past tense? Active or passive?
* Not comma as decimal separator
* Not unlimited space – economy. Be concise
* Check out: <https://www.nature.com/scitable/ebooks/englishcommunication-forscientists-14053993/126083980#bookContentViewAreaDivID>
* Accept to review papers

# Specific language advice

* German and Dutch: <https://www.nature.com/scitable/ebooks/english-communication-forscientists-14053993/126084360#headerAndCitation>
* French, Italian and Spanish: <https://www.nature.com/scitable/ebooks/english-communication-forscientists-14053993/126084360#headerAndCitation>
* Chinese and Japanese: <https://www.nature.com/scitable/ebooks/english-communication-forscientists-14053993/126084360#headerAndCitation>

# Recap… Learning Objectives

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