Writing a research paper

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Writing research papers

Read the literature!

• Use the net to follow the literature in your field
• Search for relevant papers: ask colleagues, snow-balling
• Try to read broader than just the narrow focus of your own study
• Literature club at your university? (You start!)
• Learn by reading fellow students’ manuscripts, discuss improvements
Writing research papers

- Write up the work step by step (literature review, organizing references, describing aims and methods..)
- Learn from others (and by reading lots of research articles) but no plagiarism!
- What is title of the paper? A way to focus on what the paper really is about
Writing research papers: Common structure of the paper

Title

Authors (plan at an early stage, only those contributing)

Abstract

Background, maybe theoretical framework rationale. Maybe hypothesis.

Aims (objectives)

Methods

• Study area
• Study design
• Study population
• Sample size
• Study methods
• Analyses

Ethical considerations

Results (deliver results as promised in aims)

Discussion (short summary of findings, validity, discuss key findings in relation to other research)

Conclusion (of the findings presented)

Contributions, Funding, Acknowledgements

References
Writing research papers: Volume?

Please remember that most journals do not accept more than 3000 words (maybe 12 pages, double-spaced) in your manuscript!

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Writing research papers:

**Title**

How to phrase a good title?
- Condenses the content
- Captures the attention
- Differentiates the paper from other papers

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Writing research papers: Authors

Who is an author?

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An author should fulfil *all four criteria*:

- 1. Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work; AND
- 2. Drafting the work or revising it critically for important intellectual content; AND
- 3. Final approval of the version to be published; AND
- 4. Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved


**Who is an author?**
Writing research papers:

Abstract

A first draft of the abstract is useful at an early stage (maybe before finishing results):
Why was it worth doing (rationale) and aim
What did you do?
How did you do it?
What were the key results?
What are the implications of your results?

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Writing research papers: Background and Aims

- When you are systematic in your reading the Background is relatively easy to outline. Most journals want it short.
- Move from general to specific information
- Should provide the rationale for the study, and very naturally lead to the Aims
- A conceptual framework may sometimes be useful

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One version of UNICEF’s conceptual framework of malnutrition
Sometimes a “mind-map” is a useful way of sorting out what the literature tells you about your topic (more for your own use)
Writing research papers:

Aims

- The Aims should be precise, include sufficient information, and easily understood. Avoid ambiguous and general words!

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Writing research papers: Methods

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We will discuss Methods tomorrow!
Writing research papers: Ethical considerations

What to include in Ethical considerations?

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Major principles of medical ethics

- The principle of respect for autonomy
- The principle of non-malevolence (not causing harm)
- The principle of beneficience (doing good)
- The principle of justice
Writing research papers:
Results

What to include in Results?

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Writing research papers:

Results

• Participation, study flow graph
• Characteristics of the study population
• Main findings, according to promises made in the Aims
• Results in text, tables, when appropriate, and graphs, when appropriate
• Results presented without comments or discussion – that comes in Discussion section

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Writing research papers:
Discussion, Conclusions, References

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Will be discussed Wednesday and Thursday
Making a table

Table 1. Level of education among 30-year old women and men in Fictitia. Fictitia Demographic Health Survey, 2014.

Primary, Secondary, University. Women, Men.

*Table? How? Make a dummy table*
Table 1. Level of education among 30-year-old women and men in Fictitia. Fictitia Demographic Health Survey, 2014.

<table>
<thead>
<tr>
<th>Level</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Primary</td>
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<td>50</td>
<td>100</td>
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*These were the numbers, what about %?*
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Data are n (%)
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*Statistics? Where should that be written?*
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Data are n (%). Chi² 91.7, p<0.001
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Data are n (%). \( \chi^2 91.7, p<0.001 \)

*But we would like to show this for urban and rural areas? How?*
Table 1. Level of education among 30-year-old women and men in urban and rural areas of Fictitia. Fictitia Demographic Health Survey, 2014

<table>
<thead>
<tr>
<th>Geographical area</th>
<th>Level of education</th>
<th>Women</th>
<th>Men</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>Primary</td>
<td>100 (42)</td>
<td>50 (18)</td>
</tr>
<tr>
<td></td>
<td>Secondary</td>
<td>100 (42)</td>
<td>150 (53)</td>
</tr>
<tr>
<td></td>
<td>University</td>
<td>40 (16)</td>
<td>80 (29)</td>
</tr>
<tr>
<td>Rural</td>
<td>Primary</td>
<td>200 (77)</td>
<td>100 (43)</td>
</tr>
<tr>
<td></td>
<td>Secondary</td>
<td>50 (19)</td>
<td>100 (43)</td>
</tr>
<tr>
<td></td>
<td>University</td>
<td>10 (4)</td>
<td>30 (13)</td>
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Could we show this in a graph?
Level of education among 30-year old women and men in Fictitia 2014
Other ways of making the graph?
Level of education among 30-year old women and men in Fictitia 2014

%
Incorporate tables and figures into the writing

The main text should:
• Tell the reader when to look at a table or a graph
• Introduce the content of the table or graph
• Point at key features or trends for the reader to note
• Draw conclusions from the table or graph
The achieved educational level of 30-year old women and men was investigated in the survey. As shown in Figure 1, women overall had a lower educational level than men. No participants were illiterate. Seventy per cent of men had secondary or higher education, while only forty per cent of women had reached that level.

Figure 1. Education levels among 30-year old women and men in Fictitia, 2015
Table 1. Level of education among 30-year-old women and men in Fictitia 2014

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Data are n (%). Chi² 91.7, p<0.001
Table versus Graph

- Tables more precise but are more difficult for the reader to interpret
- Graphs less precise but often easier to interpret and convey a message more strongly

Table 1. Level of education among 30-year-old women and men in Fictitia 2014

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Table versus Graph

- Tables more precise but are more difficult for the reader to interpret.
- Graphs less precise but often easier to interpret and convey a message more strongly.
- When to use which depends upon what the author wants to emphasize: details or overall impression.
- Don’t use the graph for not so important findings – it takes away the attention from more important results.

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Check the logical flow of the paper!