# Writing a research paper

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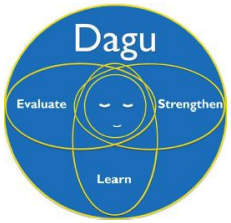
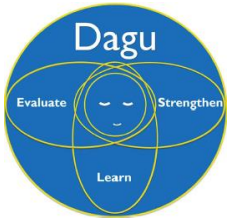
Dagu Scientific Writing Workshop, Gondar, Ethiopia, July 10-14, 2017



**Writing research papers**

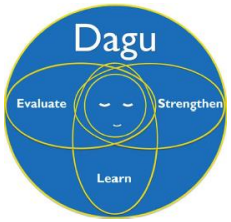
*Read the literature!*

- 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)*

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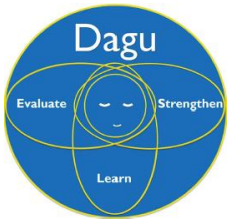
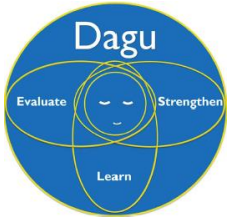


**Writing research papers: Volume?**

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

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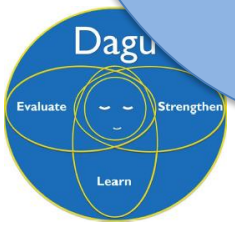
**Writing research papers:**
**Title**

How to phrase a good title?

- Condenses the content
- Captures the attention
- Differentiates the paper from other papers

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**Who is an author?**

http://www.icmje.org/recommendations/

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

## Writing research papers: Abstract

*A first draft of the abstract is useful at an early stage (maybe before finishing results):*

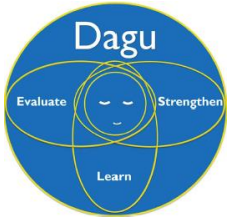
Why was it worth doing (rationale) and aim

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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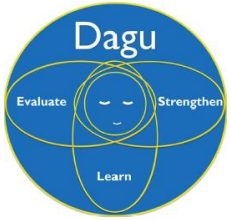
## Writing research papers: Background and Aims

- 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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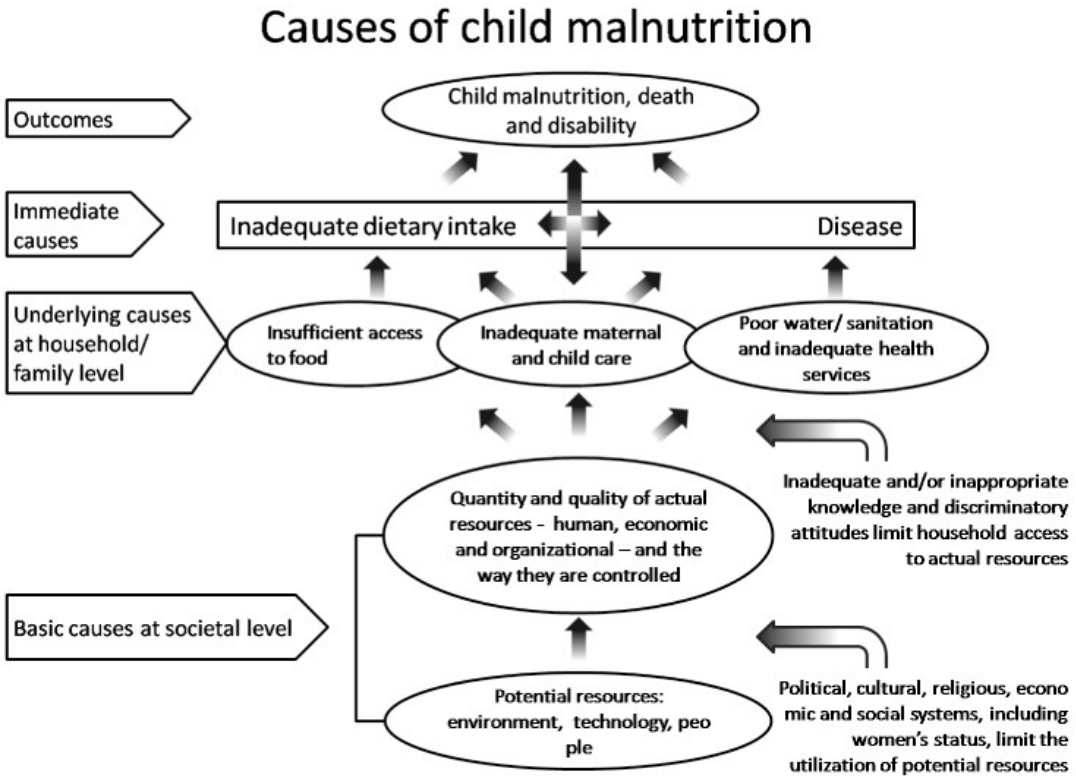
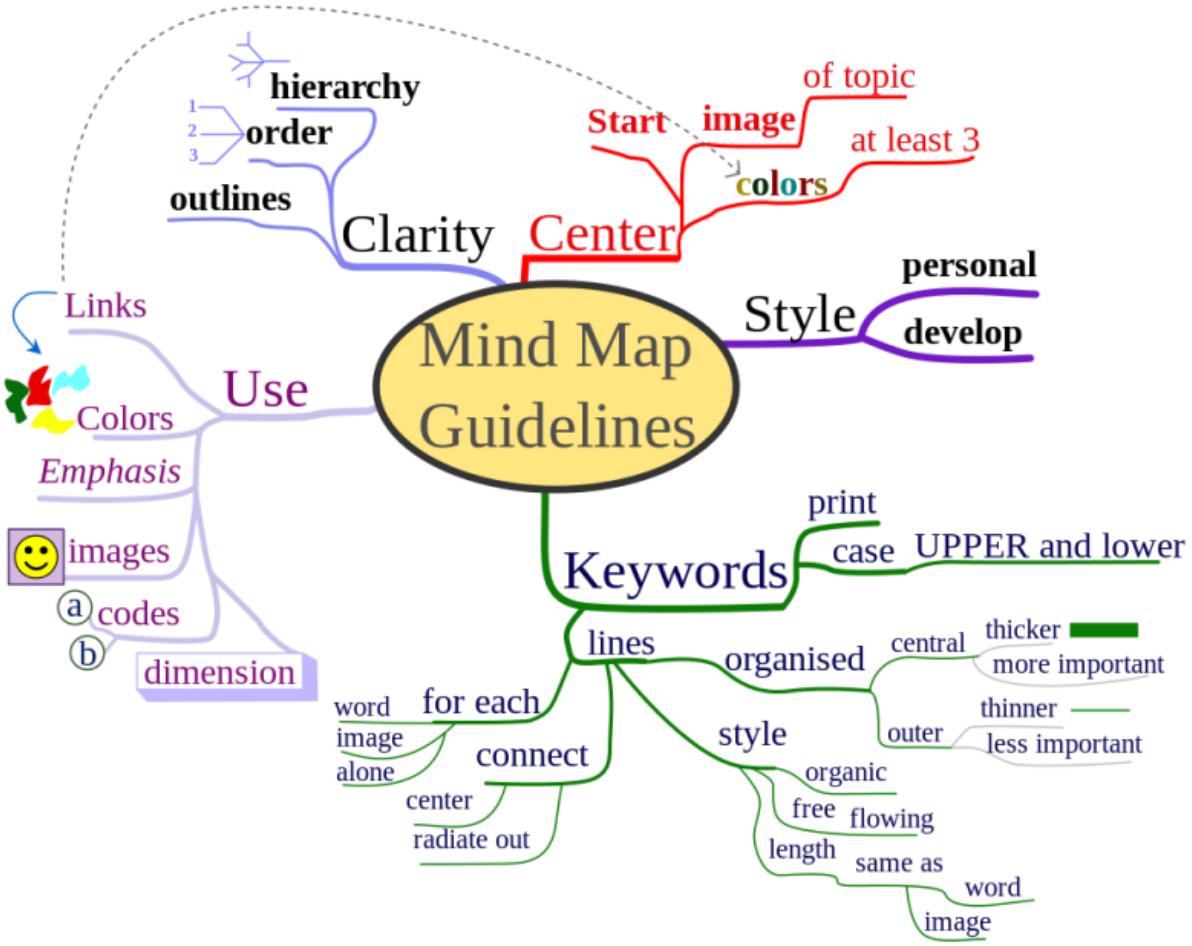
**One version of UNICEF's conceptual framework of malnutrition**

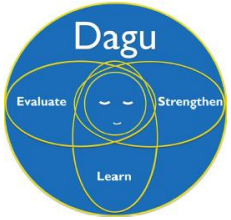


**Sometimes a “mind-map” is a useful way of sorting out what the literature tells you about your topic (more for your own use)**



## Writing research papers: Aims

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

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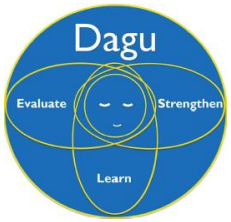
**Writing research papers: Methods**

We will discuss Methods tomorrow!

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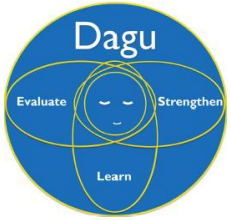
**Writing research papers: Ethical considerations**

What to include in Ethical considerations?

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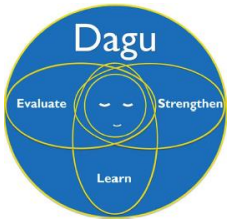
**Major principles of medical ethics**

- 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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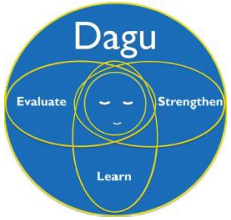
## Writing research papers: Results

- 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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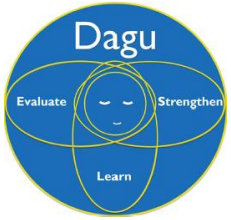
**Writing research papers: Discussion, Conclusions, References**

Will be discussed Wednesday and Thursday

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# 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***

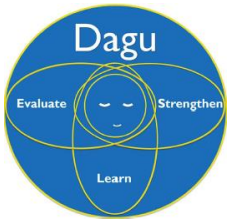

Table 1. Level of education among 30-year old women and men in Fictitia. Fictitia Demographic Health Survey, 2014.

| Level | Women | Men |
|---|---|---|
| Primary | | |
| Secondary | | |
| University | | |

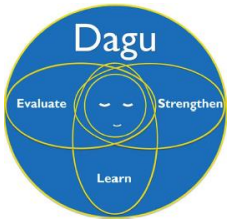

Table 1. Level of education among 30-year old women and men in Fictitia. Fictitia Demographic Health Survey 2014

| Level | Women | Men |
|---|---|---|
| Primary | 300 | 150 |
| Secondary | 150 | 250 |
| University | 50 | 100 |

***These were the numbers, what about %?***

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

| Level | Women | Men |
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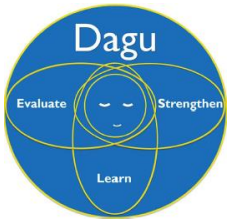
Data are n (%)



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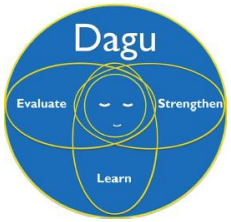
Data are n (%)

***Statistics? Where should that be written?***



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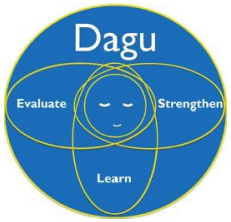
Data are n (%). $Chi^2$ 91.7, $p<0.001$



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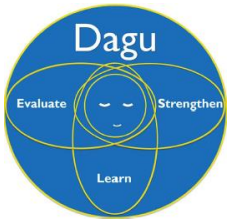


Make tables and graphs relatively independent of the main text – without overloading the table head

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

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***But we would like to show this for urban and rural areas? How?***

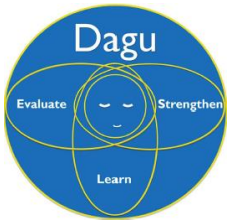
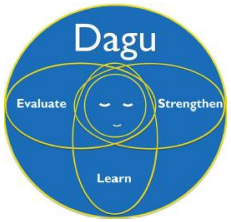


Table 1. Level of education among 30-year old women and men in urban and rural areas of Fictitia. Fictitia Demographic Health Survey, 2014

| Geographical area | Level of education | Women | Men |
|---|---|---|---|
| Urban | Primary | 100 (42) | 50 (18) |
| | Secondary | 100 (42) | 150 (53) |
| | University | 40 (16) | 80 (29) |
| Rural | Primary | 200 (77) | 100 (43) |
| | Secondary | 50 (19) | 100 (43) |
| | University | 10 (4) | 30 (13) |

Data are n (%)



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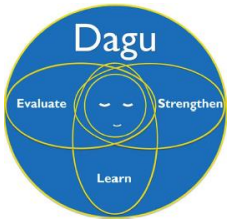
***Could we show this in a graph?***



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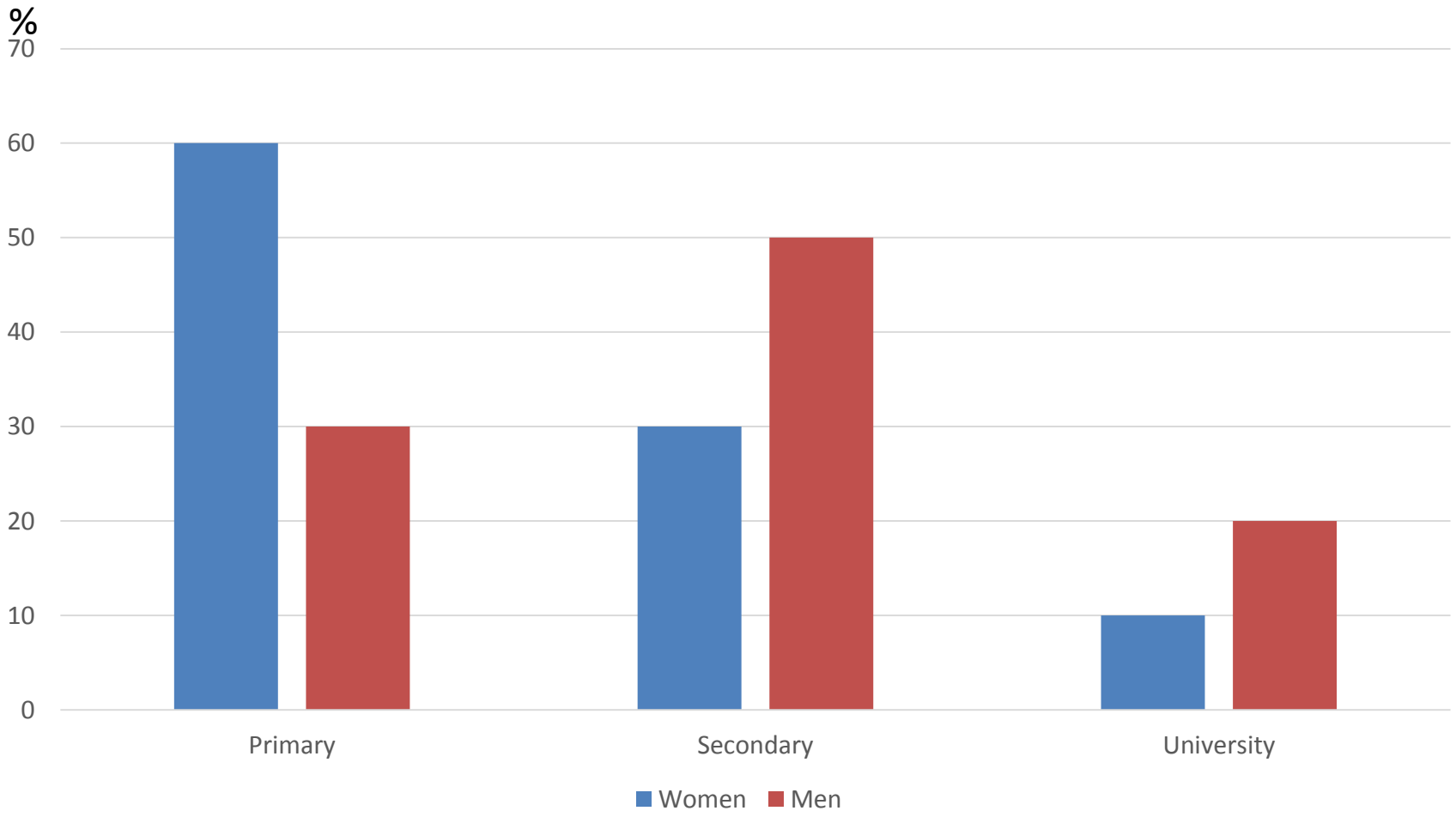
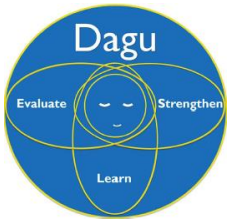


# Other ways of making the graph?



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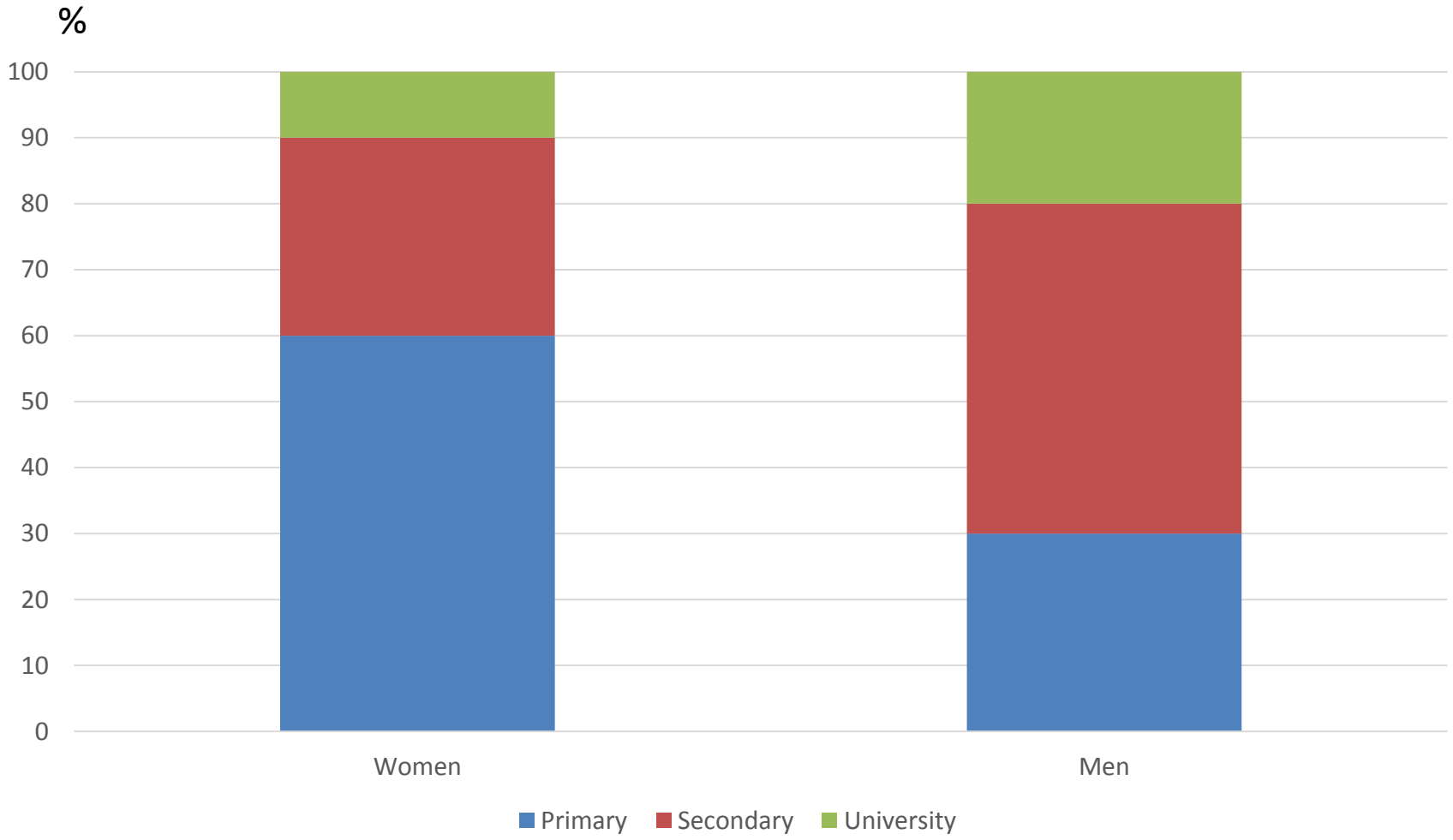

**Incorporate tables and figures into the writing**

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

## Incorporate tables and figures into the writing

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.

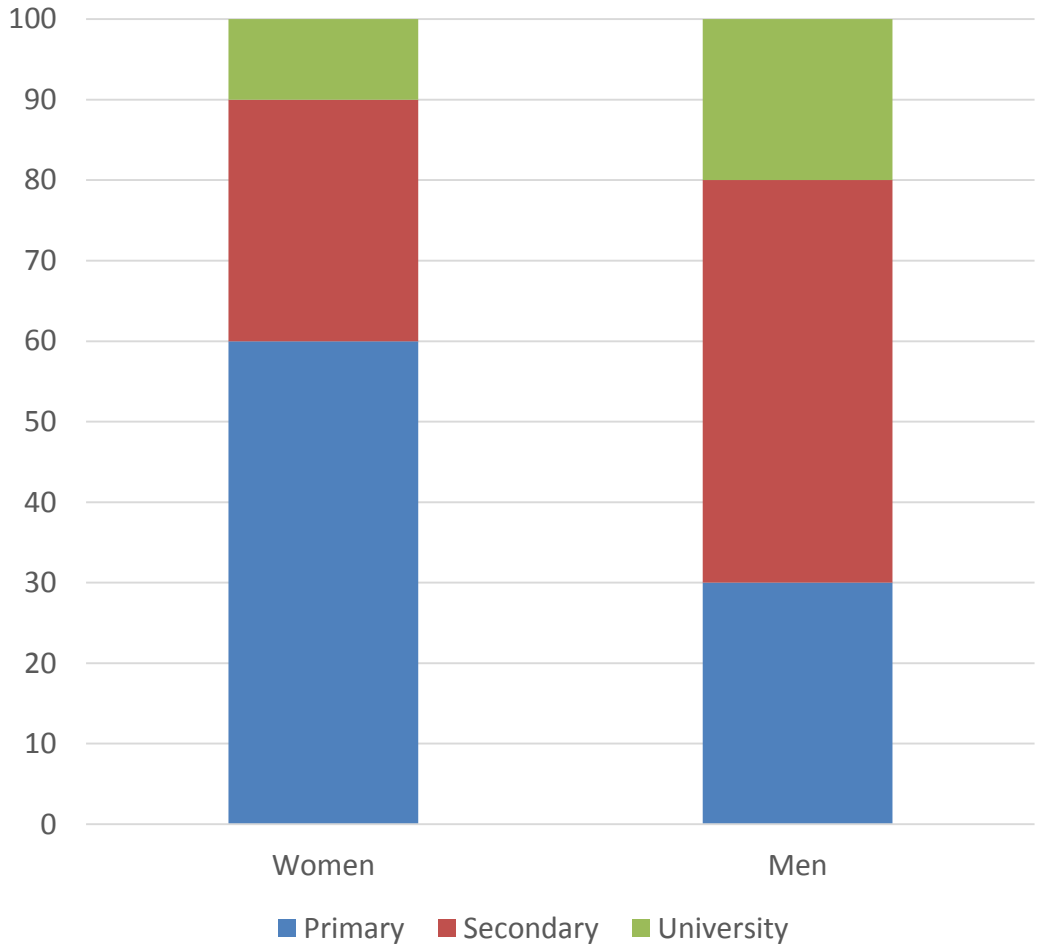


Figure 1. Education levels among 30-year old women and men in Fictitia, 2015

**Table versus Graph**

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| Level | Women | Men |
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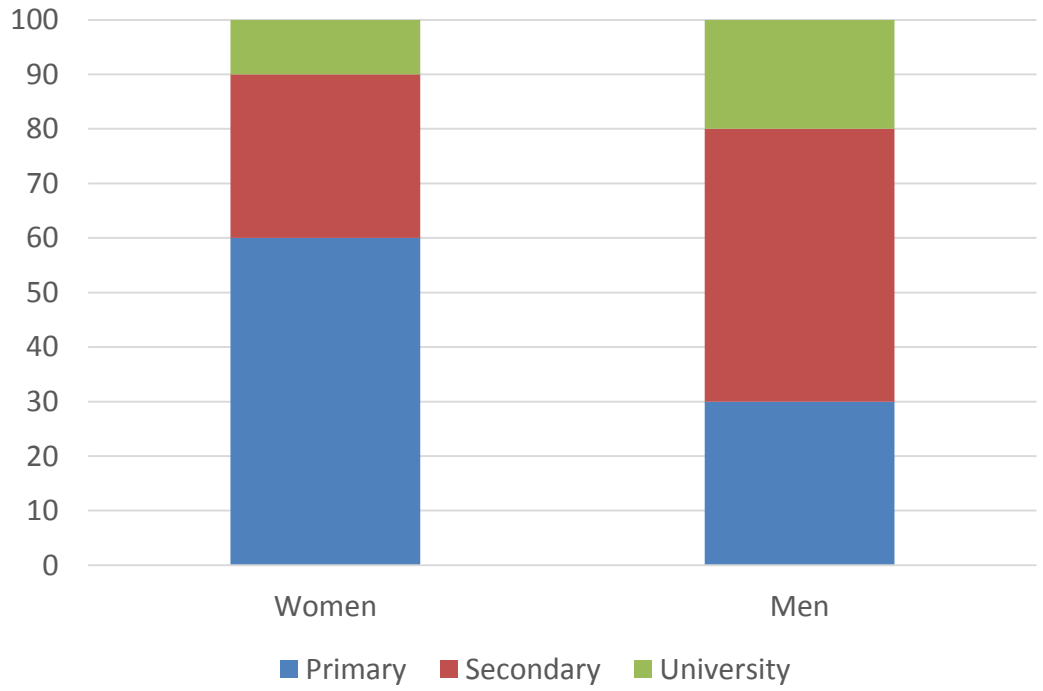

## Table versus Graph

- 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

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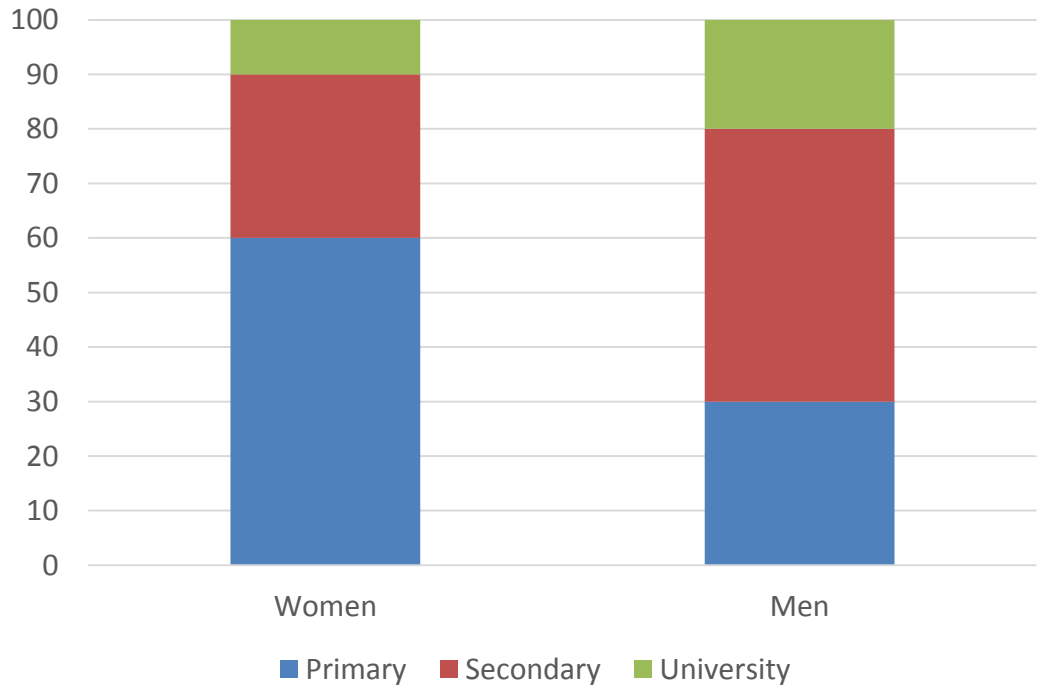

## Table versus Graph

- 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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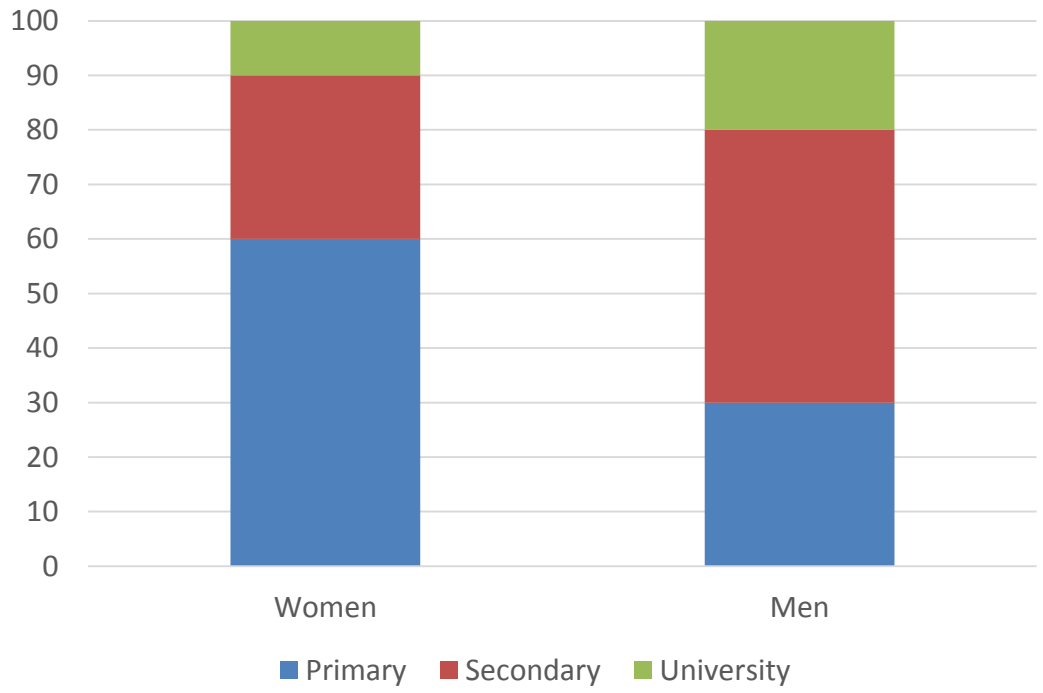
|---|---|---|
| Primary | 300 (60) | 150 (30) |
| Secondary | 150 (30) | 250 (50) |
| University | 50 (10) | 100 (20) |

Data are n (%). $Chi^2$ 91.7, $p<0.001$



# Check the logical flow of the paper!