

## Tips on Writing a Scientific Paper.

Bill Lore MD, FRCP Nairobi Kenya.

### Assumptions.

- That research has been done.
- That data has been collected and stored.
- That data have been analysed, collated and synthesized.
- That the issues about authorship have been sorted out.
- That the author has read instructions / information to authors issued by the journal to which the author wishes to submit the paper.

### Planning

Before an author begins to write a manuscript he / she must PLAN the report according to the type of journal that is most likely to be targeted readers. For example East African Medical Journal is a General Medical Journal; that is, it is directed to a very BROAD

spectrum of readers e.g. General Practitioners, specialists in various disciplines, administrators, health planners and policy makers, researchers academics etc.

*The author must consider the type of paper he is writing visa Vis the journal to publish it.* The author must consider the type of papers that the particular journal publishes.

- Research paper? Original study? RCTs
  - Clinical studies
  - Community studies.
- Review paper?
- Case report?
- Editorial or platform papers (legal / ethical issues).
- Others.

### Consider the length of the paper.

No matter how important the topic is the length of the paper must be put into consideration. For instance, the recommended lengths of the different types of papers in the East African Medical Journal are as follows:

<i>Editorials:</i>	<b>800 – 1000 words.</b>
<i>Case reports:</i>	<b>1000 – 1500 words.</b>
<i>Research papers</i>	<b>2000 – 2500 words.</b>
<i>Review papers:</i>	<b>3500 – 4000 words.</b>
<b><i>Letters to the Editor should be as brief as possible.</i></b>	

Remembered that lengthy papers have high reader sedation index!

### Format of a scientific paper.

The author must satisfy the requirements of the particular journal with respect to its format. Different journals require different formats. The author should comply with the format requirements of the journal to which he / she is submitting the paper. Many international peer-reviewed journals recommend the AIMRADAR format.

- A - Abstract.
- I - Introduction.
- M - Material and Methods.
- R - Results.
- A - And
- D - Discussion.
- A - Acknowledgment.
- R - References.

### ABSTR ACT / SUMMARY.

An abstract or summary tries to answer the question: What is the crucial information that the author wishes to get across as factually as possible?

Many international peer-reviewed journals now require structured abstracts, mainly because superiority of structured over prose abstracts for purpose of indexing and online readership. An abstract is the window display of the main paper. An abstract is to the main paper what an appetizer is to the main meal. An appetizer must be sweet for the main meal to be longed for. Therefore an, abstract must convince the reader that the main paper is worth reading. Many journal include the following in the structured abstract:

- Background.
- Objective(s).
- Design.
- Setting.
- Patients / subjects.
- Intervention(s).
- Main outcome measures.
- Results
- Conclusion (s).

## Background

Background information is not a mandatory requirement in many journals including East African Medical Journal (EAMJ). For EAMJ, if the author prefers this sub-heading, then it **MUST** be very brief, no more than two short sentences.

## Objective(s)

A good scientific paper should have one or two objectives only, and this/these should be stated clearly.

## Design

This sub-heading is for study *Design* not *Methods*. Description of methodology should not be included here.

## Setting

Describes where (and sometimes when) the study was done.

## Patients / subjects

This should give a succinct description of the study patients / subjects (age, sex etc.).

## Intervention(s)

This should mention only vital interventions associated with or related to the results. It may be clinical, epidemiological or other form of intervention.

## Main outcome measures

These are not results but parameters by which results are measured.

## Results

Gives the study finding.

## Conclusion(s):

Must be drawn from the results available and must be related to the objective(s).

## Key words:

Some journals instruct authors on key words. If that is the case, these (key words) should be placed immediately after the abstract.

## INTRODUCTION

The introduction must endeavour to answer the question: Why did you start doing this study? What was the rationale?

- A scientific paper is not a thesis; so do not write the introduction in a manner similar to the literature review of a thesis, which is normally lengthy.
- You must be honest in quoting published work, in that you must quote only those works you have actually read.
- The Introduction should reflect the state of the art of the subject or topic studied. Therefore the references must be up-to-date and preferably recent. Include references already published in that journal, if possible and if available.
- The introduction must select the milestones /beacons of the subject / topic.
- It should normally end by stating the objective(s) of the study.

## MATERIAL AND METHODS

In the section on material and methods, the author should strive to answer the following questions:

- What did you do?
- How did you do it?
- Who did you study?
- Where was the study done?
- How many patients / subjects did you study?

Therefore, give appropriate and relevant details of the methodology unless these are known, in which case you can direct the reader to an authoritative reference on the methodology. (*This helps any future researcher to be able to REPRODUCE the methodology.*)

The way this section (material and methods) is written will differ according to the nature of the study (RCTs, epidemiological studies etc.)

## RESULTS

This section should answer the question: **WHAT DID YOU FIND?**

- Confine your report of the results to those accruing from the index study.
- Report the results clearly and succinctly.
- Avoid too many illustrations.
- Tables tend to be preferred over figures if both depict the same results.
- Avoid tables that are too large.
- Avoid elaborate explanation or interpretation of results in the section of results.

## DISCUSSION

The section of discussion should attempt to answer the following questions:

- What do the results of the study mean?
- What inferences can be drawn from the results?
- How do they relate/compare with results of other studies?

There must be high level of reasoning-out and debate, but this exercise must remain confined to the index results.

- The author is not allowed to draw out conclusions outside the results he /she has reported in the paper. In other words, **DO NOT DISCUSS RESULTS WHICH THE READER CANNOT SEE IN THE PAPER.**

The author must only compare **LIKE WITH LIKE**. It is often difficult for authors of scientific papers to adhere to this rule; this weakens the discussion.

- In comparing **LIKE WITH LIKE**, the author must carefully examine the **MATERIAL AND METHODS** of the studies being compared.
- The author is allowed to advance plausible explanations, but such assertions must be kept to a reasonable limit, in other words, **DO NOT OVER-DO IT, KEEP TO A MINIMUM.**
- If adequate comments on the results have been provided in the section of results, then the discussion should be brief.

## ACKNOWLEDGEMENT

This section includes several groups of people or organizations that contributed to the study:

- Source of funding / financial grant.
- Patients / subjects studied.
- Help with data collection and data analysis.
- Help with laboratory work / experiments.

- Help from the nursing staff.
- Authority to perform research e.g. research clearance from Ethics and research committee.
- Permission to publish data – usually the Head of the institution (e.g. Hospital, research centre, health authority).

In recent times it is fashionable (almost considered a requirement) for authors to state what each of them contributed to the study, for instance:

- George Kamau collected the data
- Samson Okoth conducted statistical analysis of the data
- G. Kamau, S. Okoth, J. Mutua designed the study
- Jelly Mutua conducted laboratory analysis.

## REFERENCES

- What is the definition of a reference in a scientific paper?
- What style is adopted by the journal to which you wish to submit your paper?
- What is the maximum number of references allowed by the journal for the type of paper (original research paper, review paper etc) you are preparing to write?
- Have you obtained consent for 'personal communication' you have included in the paper?
- Is it true that references marked "In Press" are actually **IN PRESS**? Can you provide documentary evidence if demanded?
- Have read all the papers listed under the section of References?

## The East African Medical Journal adopts the Vancouver style.

## SUMMARY

1. Writing a scientific paper assumes that research has already been accomplished, data collected, stored and analysed, collated or synthesized
2. The exercise also assumes that the issue of authorship has been addressed and amicably concluded.
3. It is mandatory for the author(s) to carefully read and understand the instructions / information

for contributors issued by the particular journal to which the manuscript is to be submitted.

4. Furthermore it is desirable that the author(s) should have read hard copies of the journal to get incite on the general style and particulars of the actual papers published.

5. The intended manuscript for submission must be carefully scrutinized in terms of its length (word limit) and most importantly, its entire format.

6. Many international peer-reviewed journals recommend the AIMRADAR format for research- based papers, but the format is somewhat different for review manuscripts, case reports and scientific letters and other communications.

7. Matters regarding ethics in general, and research ethics in particular, must be addressed, including appropriate acknowledgements and declaration

of possible conflicts of interest.

8. All authors must sign the authors' page to signify of submission, authorship and transfer of copyright.

9. It is also recommended that authors arrange for an in-house pre-submission critique by peers.

**Professor Bill Lore, Editor of the East African Medical Journal, presented this paper at the Annual General Meeting and Scientific Conference of the Uganda Medical Association held in Kampala in 2002. For the benefit of the young doctors who are planning to publish in peer-reviewed Scientific Journals, he kindly gave permission to the editor of The East and Central African Journal of Surgery to publish this paper. The Editorial Board is grateful to Prof. Lore. (Editor).**