

How to Read & Write a Scientific Paper

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Why Do You Read or Write a Paper ?

- Era of evidence based medicine
- The conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients

Why Do You Read or Write a Paper ?

- Results of medical research are used to make patient care more objective, logical and cost effective
- Rather than basing clinical decision on one's own clinical experience we base our decisions on the collective experience of thousands of clinicians and researchers

Why Do You Read or Write a Paper ?

- **Progress in any academic endeavor is a combined effort of thousands of workers scattered all over the world but working towards a common objective**
- **Share information on global platforms such as books, journals, newsletters, periodicals**
- **If papers are not published a lot of good and useful work that could cater to the benefit of the human race remains locked in thesis and reports**

Medical Literature – How to Read a Paper!

Where Do We Get Information ?

- Medical libraries
- Databases on CDROM
- ON line databases-e.g. The Medline compiled by the national library of medicine of the USA

How to Make the Most of Search Keys?

- Enter your phrase or phrases and click '**search**'. Use the '**and**' operator to search for items that have both phrases, use the '**or**' operator to search for items that have either phrase.
- Use the '**not**' operator to narrow your search.
- Search within a journal by using the journal name field, publication date, name of authors.
- You can search within age limits.

The Traditional Hierarchy of Evidence

- Systematic reviews and meta-analysis
- Randomized controlled trials
- Cohort studies
- Case controlled studies
- Cross sectional surveys
- Case reports

Which Paper to Read & When

- Therapeutic options for a disease- drugs, surgical procedures: meta-analysis or randomized control trial
- Validity of a new diagnostic test or a screening test - cross sectional survey
- Prognosis- longitudinal cohort study
- Causation- cohort or case control study

Assessing the Quality of the Paper

- Was the study original ?
- Whom is the study about ?
 - Recruitment
 - Inclusion, exclusion
- Was the design of the study sensible ?
- Was the study adequately controlled, blinded ?

What About the Magic P Value ?

- Is the sample size and selection method correct ?
- Correct tests applied ?
- Are the results properly interpreted ?

To Recap

- Choose paper carefully. Does it answer your questions?
- Was study original and the methodology appropriate?
- Was the study ethical?

Writing a paper!

Getting Started

- Formulate your Research Question
- Thorough literature search
- Find your readership
- Identify journal
- Carefully study articles from the journal, particularly the type of article you want to write

Before writing a manuscript...

- **Decide which journal you intend to submit**
 - **Impact factor of the journal**
 - **Probability of acceptance**
 - **Publication lag**
 - **Read the journal's "Instructions for authors"**
- **Desired audience**
- **Journals differ in style – Study them carefully**

Getting Started

- Instruction to authors
- IMRAD format
 - I = introduction (why this study was done)
 - M = methods (how)
 - R = results (what was found) AND
 - D = discussion (interpretation)
- Involve a statistician from the beginning if number crunching is involved

Sections of a Research Paper

■ Title

■ Abstract

■ Introduction

■ Methods

■ Results and Discussion

■ Conclusion

■ Acknowledgements

■ References

■ Abbreviations used

■ Tables

■ Figure Legends

■ Figures

Remember

All sections must be--

■ **Succinct:** not verbose

■ **Clear:** easy to read and understand

■ **Balanced:** all the major topics are covered

■ **Focused:** no superfluous information is
included

Preparing the Manuscript

- Always use good size fonts
- Flow of writing should be smooth
- Always spell check and don't rely on your computer!
- E.g. **Four** major signs vs. **for** major signs
- Always keep at least one hard copy of the sent manuscript with you!

Peer Review Process

- Papers are sent out to referees for comments on scientific validity, originality and importance to readers
- Always do your own peer review first !

Common Reasons Why Papers Are Rejected

- Lack of originality
- Study did not examine important scientific problem
- Methodology was wrong
- Sample size too small
- Statistical analysis incorrect
- Ethically unjustified

Suggestions for Novice

- Start with a paper in a conference
- Letters to the editor have no peer review !
- Try for a web based publication
- Initially write with someone who has done it before !

Common mistakes

✚ Being short, it is easy to get it wrong

✚ Abstract really an introduction

✚ Missing information

✚ Too much information

Common mistakes

Raw data

No figures or tables

Broad statements

Inconclusive statements

Ambiguous data sources

Common Mistakes

- Acknowledge the significant assistance of those who helped you plus any financial support (e.g. grant agency) or in-kind support.

References

- ✚ Often overlooked
- ✚ Types of references –
 - ✚ The majority of a manuscript's references should be from peer-reviewed sources.
 - ✚ Authors should not reference themselves too often.
- ✚ Formatting - Check journal reference format
- ✚ Use Endnote facility of Microsoft Word

Additional Tips

- ✚ Use past tense while writing “Introduction”, “Previous Work”, “experimental”, “model” sections
- ✚ Use present tense while describing experiments, figures and discussing results
- ✚ While describing figures do not use repetitive phrases, use synonyms and vary your sentence structure
- ✚ Use short sentences not more than 10 words
- ✚ Do not use flowery language or copy from previous literature
- ✚ Use your own words

Additional Tips (cont...)

- ✚ Make a practice of writing about your own work right from the beginning of your project
- ✚ Use outlines from beginning – each idea has an outline
- ✚ Give the draft to an experienced author for comments
- ✚ Rarely is a paper accepted without revision
- ✚ When a paper is returned for revision, the referee comments always sound worse than they are
- ✚ When returning a revision, attach a letter specifying exactly what you've done to meet each referee's criticisms
- ✚ In the end, if a paper is rejected outright, do not react negatively. Use the referee reports to improve the paper for submission to another journal.

Scientific Misconduct

 Gift authorship

 Plagiarism - publication of another author's language, thoughts, ideas, or expressions

 Fabrication – of results

 Falsification - information that has been created or obtained illegally

 Conflict of interest

For Successful Medical Writing

Patience and Persistence!

Thank You!

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