

# “TIMRAD” MODULE IN SCIENTIFIC WRITING

Gayathri L. Patil<sup>1</sup>, Patil LS<sup>2</sup>, P Shashikala<sup>3</sup>

<sup>1</sup>Professor, Dept. of OBG,

<sup>2</sup>Professor, Dept. of Surgery,

<sup>3</sup>Professor and Head, Dept. of Pathology & Co-ordinator MEU.

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Scientific writing is an art mastered through practice. Lot of effort is put in while we write an original article, review article, short communications, case reports, editorials, book review, technical reports, dissertations, grant proposals etc., which are some of the types of scientific writing. The basic structure of an article has a Title, an abstract, body (IMRAD) and lastly the references.

**Title** of an article condenses the paper's content in a few words, captures the readers' attention and differentiates the paper from other papers of the same subject area. Basic mantra here is to keep it simple, concise and attractive (catchy), use appropriate descriptive words, avoid abbreviations and jargon.

**Abstract:** Ideally it needs to be written on completion of the project as it is the mini version of the paper. It would be ideal if the following questions are considered before embarking on writing the abstract. Principal objectives - Why did you start? (20-30%) Methods - What did you do, and how? (10-20%) Principal results - What did you find? (35-45%) Main conclusions - What do your findings mean? (20-25%). Organising is more than a literary skill, usually written in a paragraph using the past tense, generally 200-250 words, it is wise to never refer to any information not in the paper and avoid/define acronyms, abbreviations. Key words are given for search engine in the future.

**IMRAD** (Introduction, Methods, Research [and] Discussion) is an acronym of a common format used for writing the body of the research papers. It was recommended by the “Uniform Requirements for Manuscripts Submitted to Biomedical Journals” at the International Committee of Medical Journal Editors (ICMJE) in 1990. The IMRAD format facilitates efficient reading by helping in easy identification of specific information. Experts in the field of research add **T** to the IMRAD module as Title of an article is as

important as any other section of the article. A brief introduction to the various components of this module is attempted for the benefit of the newbies in research methodology.

**Introduction:** should be brief, clear, to the point and written mostly in present tense and it may state the study group, study design and methods used (How and why are these better than those of previous studies) with expected conclusion could be state. It will be ideal to define any specialized terms, definitions or abbreviations you intend to use.

**I-Introduction** (Why did you start)

1. Rationale of study
2. Provide sufficient background - nature and scope of the problem
3. Review pertinent literature,
4. Define lacunae & shortcomings
5. State aim of the study

**M - Methodology** is always written in the past tense.

Methods (What did you do)

(Materials and Methods; Patients and Methods)

Who? What? When? Where? How? Why?

1. Study design-case control, Cohort, retrospective/prospective, Controlled, uncontrolled randomized, non-randomized, open, blinded (single or double)
2. Study material - What did you work with, Humans, animals, in vitro preparation, volunteers/patients, controls.
3. How it was selected, eligibility, definitions, inclusion/exclusion criteria Population-based, hospital-based, particular age group, gender, SE status, urban, rural, suburban.
4. What was done to the study material - Interventions, Randomization/blinding: any violations, drugs, chemicals (amount, route, frequency, source) techniques and procedures, modifications

## Gayatri L. Patil

Professor, Dept. of OBG,  
S.S. Institute of Medical Sciences & Research Centre  
Davangere, Karnataka, Mobil: 9886733535  
E-mail: ptlgayatri@yahoo.co.in

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equipment used (model, settings), compliance, measurements, by whom? Was it objective and accurate? How often? Repetitions --> how averaged? Who administered the questionnaire? Where?

5. How was the effect assessed outcome measures, response, partial response, failure, relapse Mild, moderate, severe, side-effects, withdrawals and dropouts.

6. Analysis -Sample size and statistical methods Hypothesis testing: How? Are assumptions OK? Multiple testing. Software used, intention-to-treat versus per protocol

7. Ethical considerations

**R-Results** (What did you find) has to be written in the past tense.

1. Data collection & recruitment,
2. Study groups, Number, baseline characteristics, drop-outs, withdrawals, absent data on some subjects.
3. Key findings - Primary outcome measures
4. Text, tables & figures,
5. Secondary findings - Secondary outcome measures, subgroup analyse.
6. Cite all tables/figures in text

**D- Discussion** (What does it all mean)

1. Recapitulation of major findings,
2. Discussions of findings as why the difference or reliability, alternative explanations.
3. Strength & pitfalls,
4. Implications of findings,
5. Unanswered questions & future research

The discussion section of the manuscript is critically important. It is where you pull together all the 'threads' of evidence you have presented in the results in the context of the background you presented in the introduction. Start by restating the problem/research question and then state the main findings of your study. Describe results in the past tense, but implications in the present tense and put findings in the context of the existing literature to describe their implications.

## Summary

Start with a brief background, with what intention you did your study then going on to methods used and processed data with results. Summary should address the following queries, Were the authors successful and did they meet their objectives for conducting the research? What conclusions have the authors drawn from this research? What are the implications of this research, as described in the article? Finally connect all ideas, explain in your own words. It is advisable not to draw conclusions and only explain what is found in the study.

## Conclusions

Summarises the principal findings, it should relate back to the introduction and the set hypothesis with a summary of evidence supporting each conclusion. Implications with the significance of the results or any practical applications.

Good English vocabulary is a boon towards successful writing practices as writing a research article is still a "monkey-puzzle tree". Once the article takes shape, check and recheck and maybe a peer review by a friend, colleague or a guide is priceless.

## References

Vancouver style of writing is the accepted format.

### References :

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