

## REVIEW ARTICLE SERIES: COMMUNICATION SKILLS

### Art of Summarizing: Writing a Good Abstract

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#### Abstract

The abstract of the paper gives its first impression as well as attracts the reader to go through full paper. Hence, the abstract writing must be given sufficient consideration. The abstract must concisely give most of the information provided in the paper. Different types of abstracts are used by different journals. It may be a simple abstract, which describes the paper in one paragraph or can be a structured abstract, which is divided into different sub-headings as the full paper. Review papers utilize descriptive abstracts, whereas, original scientific papers use informative abstracts. This paper gives important tips to write abstracts properly. The abstract must be written after completion of the paper, as that avoids 'mismatch' between the paper and abstract. An abstract properly written should stand on its own. As abstract is a concise form of the full paper, it takes lot of time, proper selection of words, proper formatting and a lot of patience to write it, so that it can attract the readers to go through the full paper.

## INTRODUCTION

The abstract provides a summary of the important information an author wants to convey to the reader, with a goal to lure the reader to go through the paper completely.<sup>1</sup> An abstract should entice the reader to learn more. In most of the journals, there is limitation on the number of words in the abstracts; the author has to convey the message properly to the reader within those limited words. The great challenge is to make effective use of these words.<sup>2</sup> This paper provides basic information about the abstracts and also the characteristics of well-written abstracts.

An abstract is a summary or, a condensed version of the complete paper.<sup>1</sup> It highlights the major points covered, concisely describes the content and scope of the paper, and reviews its material in abbreviated form. The purpose of the abstract is not only to give basic information of the paper or data contained in the paper, but also the reason for writing the paper, and the value added by the paper to the existing knowledge bank.<sup>3</sup>

### Paper Writing: Story Telling through Question-Answers

The structure of the abstract depends on the type of the paper. In case of review articles, the abstract tells the reader about the background of the topic, importance of the topic and concisely describes the points covered. For example, if a paper is being written on anticancer drug targeting, the author has to tell the reader about the background of the research field, importance of targeting in cancer therapy and then provide the description of the field selected, which may include different technologies involved in anticancer targeting, development of drug delivery devices and their evaluation. Also, the paper may not be ended simply without telling the reader the outcome of the works carried out and the future directions.<sup>4</sup>

In case of original research papers, the IMRAD format (Introduction, Methods, Results, and Discussion) is usually followed. Each section of the paper contributes to the story by answering some questions.

1. **Introduction:** What is the hypothesis/ problem being studied? Why would it be of interest to the reader?
2. **Methods:** How the hypothesis was tested? How the problem posed in introduction was solved?
3. **Results:** What are the findings? Whether the hypothesis was proved? Whether the problem was solved?
4. **Discussion:** What is the meaning of the results obtained? What value has been added to the existing scientific knowledge?

A well-written paper tells a story in scientific language, by answering the above questions. A well-written abstract tells the same story, by answering the same questions, in a concise manner. An abstract should start with a brief introduction of the topic and the goals of the study. This will be followed by how the study was performed and what were the findings. It should end with major conclusions drawn from the study. The first and last part of the abstract may be written in 1-2 sentences each, but the major portion should cover the methods and results.

### Characteristics of a Well-written Abstract

A well-written abstract is characterized by the following:<sup>4-5</sup>

1. States the background and goals of the study clearly.
2. Provides answers to the questions posed or hypothesis stated.
3. Follows correct format and style.
4. Follows the IMRAD format, in case of original research paper.
5. Does not make conclusions that are not supported by the data.
6. Does not give information that is not present in the paper.
7. Does not cite Tables, Figures and References.
8. Stays within the allowed limitation of words.

Another important point is that a well-written abstract does not contain / include any abbreviations and references.

### **WRITING AN ABSTRACT**

Writing an effective abstract will improve the chances of acceptance of the manuscript, encourage the people to read it, and increase the impact of the paper. The best way to write an effective abstract is to start with a draft of the complete manuscript. For writing an effective abstract, the following points must be considered:<sup>4-5</sup>

1. Identify the following:
  - a. Major objectives and conclusions
  - b. Phrases with keywords in the methods section
  - c. Major results from the results section
2. Assemble the information:
  - a. Into a single paragraph
  - b. State the hypothesis in the first sentence
3. Do not include or omit the following:
  - a. Detailed background information, literature review, and description of methods
  - b. Extra words and phrases

After writing the abstract, the paragraph may be revised so that the final abstract may convey only the essential information. The written abstract may be given to a colleague or a person who is not familiar with the work to find out whether the abstract makes sense and he/she has understood the essence of the work just by reading the abstract.

### **Abstract Stands on Its Own**

The reader should get as much information as possible from the abstract, without going through the paper. In a research or review paper, title and the abstract are the most commonly read parts. Like title, abstract should also stand on its own. In the current age of online information boom and electronic publications, papers are accessed by just going through the title and abstract.<sup>3</sup> Many abstracting and indexing cites (ScienceDirect, PubMed) display title and abstract of a paper. Most of the journals display only title and abstract on the websites. If the reader wants full access, he has to pay-per-view or pay-per-article. Thus, abstract should be properly written. If the reader is not impressed / attracted by the information provided in the abstract, or if they perceive the abstract to be weak, irrespective of the quality of work, the paper goes unnoticed. Also, the editors and peer reviewers make an opinion about the paper initially, based on the quality of abstract.<sup>4</sup>

Readers expect maximum possible information in the abstract. They want to understand the rationale behind the study, major results and the conclusions drawn from them. If the abstract lacks useful information, it fails to achieve its goal of attracting the reader towards the full paper. Hence, authors must give as much information as possible within the given word limits.

### **Abstract Format and Style**

Based on the format, the abstracts may be grouped into two types – *Conventional/ Simple and Structured* abstracts. A simple abstract contains a single paragraph that may follow IMRAD format, without assigning any headings/ sub-headings of the format. Simple abstracts are further grouped into descriptive and informative abstracts.<sup>1,5</sup>

*Descriptive abstracts* describe the content of the paper. They will be more or less like the summary at the end of the paper. They are short in length and do not provide details about experimental design or results of the study. They answer the questions, but in a generalized terms, and are suitable for review articles. *Informative abstracts* include details such as study design, methods and major outcomes, and may serve as a replacement for the full paper. They are used in original research papers.<sup>4</sup>

In a structured abstract, the text is divided into individual headings as used in the full paper. Commonly, the abstract may contain the following general headings: Background, Methods, Results and Conclusion; but, depending on the format of the journal, the headings may vary. Under each heading, the author provides specific information. The author has to follow the journal's guidelines for preparing the structured abstract under the specified headings.<sup>4</sup>

### **Abbreviations in the Abstracts**

Use of abbreviations in the abstracts is a most common error by authors. It is better to spell out the abbreviations, if any. If abbreviations are used in the abstract, it may confuse the reader, as the reader may not have access to the list of abbreviations given in the full paper. Some of the abbreviations which are most common, such as DNA, RNA, may be used in the abstracts. If a long name is used many times in an abstract, abbreviation may be used after defining it the first time it is used in the abstract.<sup>1</sup>

### **Abstract is Written after Completing the Manuscript**

Abstract must be written after completion of the manuscript. If it is written before starting the paper, it may end up containing information that is not found in the main paper or vice versa. While revising the paper, some information may get added up at a later stage, but may get missed in the abstract. Writing the abstract after completing the manuscript allows the author to link it with title and introduction of the paper, which is characteristic of a good paper. The main message of the title and the background information provided in the introduction must be reflected in the abstract. Use of same verbs, nouns, adjectives in the title, abstract and introduction, serves beneficial, as they serve as key words/ phrases in indexing and online search.<sup>5</sup>

During peer reviewing of the paper, the editors and reviewers request the authors to add or delete text, information about the experiments, re-analysis of data, reinterpretation of results, reformatting of summary and conclusions, which again requires the modification of abstract. Hence, it is advisable to reevaluate the content of abstract after each modification of the manuscript, and see that the modified text and abstract have a perfect match.<sup>5</sup>

## **CONCLUSION**

A full length paper may be written in a short time, but, condensing it in the form of abstract takes long time, careful usage of words, proper formatting, and proper styling, which makes it a good abstract, that can draw the attention of the reader towards the full paper.

## **DECLARATION OF INTEREST**

It is hereby declared that this paper does not have any conflict of interest.

## **REFERENCES**

1. Zeiger M. Essentials of writing biomedical research papers. New York: McGraw Hill, 2000.
2. Day RA, Gastel B. How to write and publish a scientific paper. Westport, CT: Greenwood Press, 2006.
3. Hairston, Maxine, and Michael Keene. Successful Writing. 5th ed. New York: Norton, 2003.
4. Katz MJ. From research to manuscript. New York: Springer; 2009.
5. Matthews JR, Matthews RW. Successful scientific writing. New York: Cambridge University Press; 2008

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