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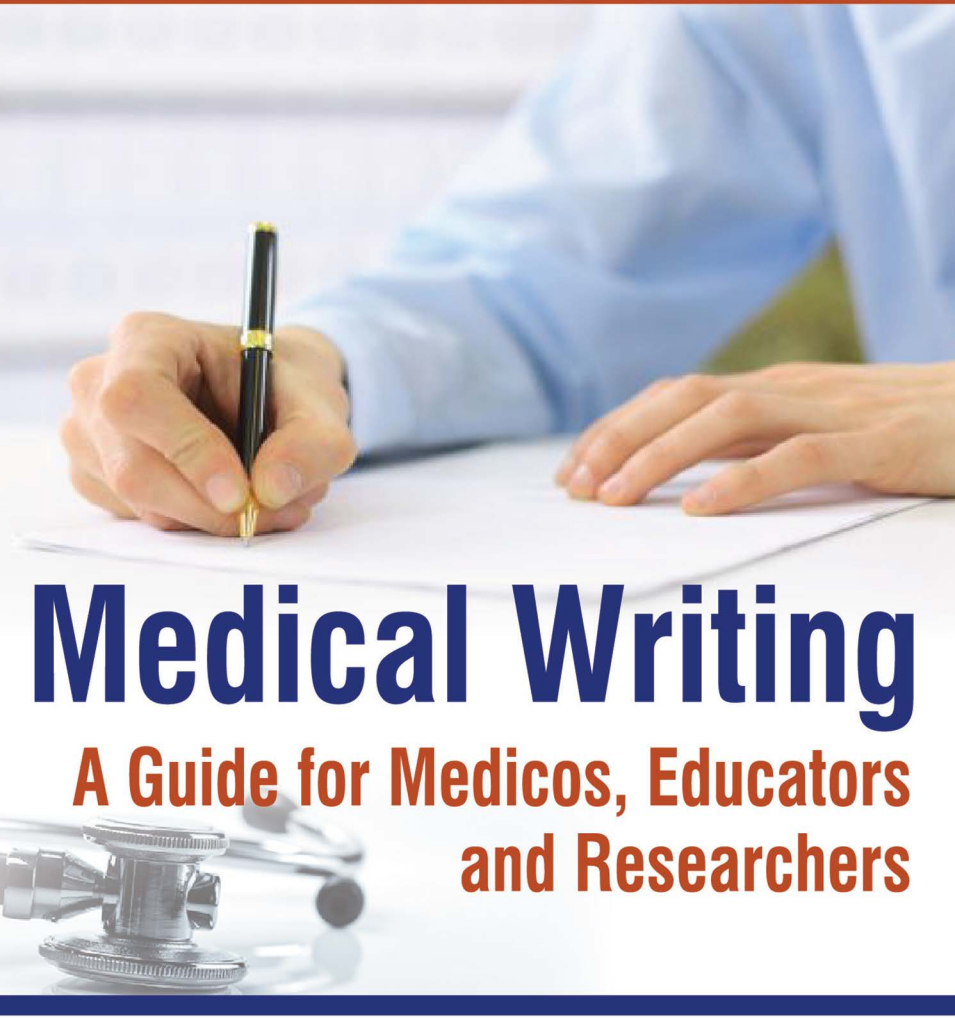

Medical Writing

A Guide for Medicos, Educators and Researchers

Putul Mahanta

JAYPEE

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CHAPTER

4

Introduction of a Research Paper

Nirmal Chandra Bhattacharyya

The introduction of a research paper is one of the most important task to write. It is basically aimed at giving a brief overview about the topic of research, the rationale of the research work and the context, a brief explanation about the research questions and hypothesis. The length of the introduction will vary depending on the type of research paper, and there is no set standard regarding the ideal length of the introduction. A well-written introduction should be able to attract the reader's interest, encouraging the reader to go through the entire article and critically analyze the content of the article.

According to the IMRAD structure, which is followed universally in writing a research article, the "introduction" is the beginning of the main text of the article after the abstract and keywords. The abbreviation, IMRAD, stands for "Introduction, Methods, Results and Discussion". IMRAD has dominated academic, scientific, and public health journals since the second half of the 20th century. It is recommended in the "Uniform Requirements for Manuscripts Submitted to Biomedical Journals".[1] The IMRAD structure helps to eliminate

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unnecessary detail and allows relevant information to be presented clearly in a logical sequence.[2,3]

For writing a good introduction, the author should give attention to the following aspects of the research work, which are to be mentioned in brief in the introduction:

ABOUT THE TOPIC OF RESEARCH

Introduction is started with a brief background of the research work, the basic reasons how and why this research question came up, and the probable solutions that can be offered. In general, introduction presents the purpose of the research paper briefly. It provides the readers with a preliminary idea about the content of the article and encourages them to go through the article in detail. It is, therefore, necessary to write about the concept or any new terminology of the research work early in the introduction. This is especially important if a new concept is being introduced with the use of any terminology about which the readers may be unfamiliar with.

ABOUT THE CONTEXT OF RESEARCH

It is necessary to include a very brief review of the existing literature already published in the field. It proves that the author has a strong knowledge and background information of the topic. The author should be able to express the specific areas most relevant to the research topic. It is important that this should be concise and yet able to indicate the author's view on the recent developments in the topic, at the same time, lengthy discussion on the subject should be avoided.

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ABOUT THE RATIONALE OF THE RESEARCH WORK

The author should clearly and briefly indicate the value of the research work and its contribution to the subject. In case of medical and public health related subject of research, the author may mention the probable benefit to the community once the proposed hypothesis is proved. In case of experimental work, it is necessary to mention if any experimental models are used in the study.

ABOUT THE RESEARCH QUESTION AND HYPOTHESIS

- The research question is mentioned towards the end of the introduction. It should be brief and focused. It must be able to relate with the title of the paper, and should be able to guide a problem into a testable hypothesis.
- For the development of good research question, FINER (Feasible, Interesting, Nobel, Ethical and Relevant) criteria have been recommended.[3]
- Once the research question is set, a concise and clear statement about the hypothesis should be mentioned. This is a statement which indicates the specific contribution or a result of the study that is likely to emerge from the research work.
- To address the research question, objectives are formulated. The objectives should be Specific, Measurable, Attainable, Realistic and Time bound (SMART).[4]

PARAGRAPHS

For an original research article, three to four paragraphs may be needed for writing the introduction. However, for short review

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papers and case reports, one paragraph may suffice to introduce the purpose of the study. One approach may be to start with one paragraph that introduces the reader to the field of study. The next paragraph then describes the context and rationale. The third paragraph deals with the research question and hypothesis. Finally, a summary sentence may be added stating how the answer to the research question may contribute to existing knowledge in the subject.[6] However, shortness is the soul of clarity. Detail descriptions, speculations and criticism of other studies may be left for the chapter on discussion.[7]

Thus, the introduction gives a brief review of the research work to be undertaken. It must be realized that the introduction differs from a structured abstract. The structured abstract is the summary of the entire article including the results and conclusion, while the introduction mainly deals with the purpose of the research work.

LIMITATIONS

If there is any weakness in the research work, the introduction is the proper place to mention it in brief. For example, an ideal experiment should have perfectly randomized samples, but if there are some good reasons why this is not possible in the experiment, the readers must be told about this in the beginning with good reasoning, so that they are aware of the shortcomings in the study, and they can be sure about the authenticity of the work.

TIPS FOR GOOD INTRODUCTION

There are few tips that can help a new author to write a good introduction.

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- A long introduction with unnecessary details will soon make the reader lose interest in the article. The author must stick closely to the purpose of the paper and structure the introduction methodically.
- The introduction should logically end at the research question and the hypothesis. The reader, after going through the introduction, should be able to know exactly what the author is trying to achieve with the paper. The same will be reflected again during the discussion and conclusion of the study. While reading the article, the reader will be able to correlate the conclusion with the purpose of the study which is already mentioned in the introduction.
- While writing the article, at some stage, the author may feel that the writing in the article has gone in a slightly different direction than initially planned. In this case, the writer may have to adjust the introduction accordingly. Alternatively, the materials and methods, results and discussion may be written first, leaving the introduction to be structured accordingly, so that there is no significant difference between what was originally planned and what conclusions had been drawn at the end of the study.

Examples of Introduction

Original Research Paper

Title: Probiotics for promoting feed tolerance in very low birth weight neonates—a randomized controlled trial.[8]

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Introduction

Enteral feeding intolerance is a major issue in premature infants, resulting in prolonged hospitalization and a predisposition to serious complications due to prolonged use of parenteral nutrition. A delay in reaching full enteral feedings is also associated with a poorer mental outcome in preterm neonates at 24 months corrected age.

As the maturation of motor activity in premature infants lags behind that of digestive and absorptive functions, it is most frequently a disorder of gastrointestinal motility that limits the use of enteral feeding in this population. An adequate establishment of the intestinal flora after birth is strictly related to motility maturation and plays a crucial role in the development of gut barrier function and the innate and adaptive immune system.

Enteral supplementation of probiotics prevents severe necrotizing enterocolitis (NEC) and all-cause mortality in preterm infants. Moreover, among the many strategies tried for prevention of feeding intolerance, probiotics are the most promising. However, they are yet to be used as standard of care. The objective of this trial was to determine the efficacy of probiotics on feed tolerance in very low birth weight (VLBW) neonates.

Case Report

Title: Incomplete Miller Fisher syndrome with advanced stage Burkitt lymphoma.[9]

Introduction

Paraneoplastic neurological syndromes (PNS) are rare disorders triggered by an altered immune system response to a neoplasm.

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They are defined as clinical syndromes involving nonmetastatic systemic effects that accompany malignant disease. PNS affect less than 0.01% patients with cancer. Small-cell lung cancer, breast cancer and ovarian cancer are the most frequent solid tumors associated with PNS. Hematological malignancies such as non-Hodgkin lymphoma are rarely accompanied by PNS affecting the central and peripheral nervous systems. There are some reports on the association of non-Hodgkin lymphoma and PNS, but Miller Fisher syndrome (MFS) is extremely rare.

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"Research publication and dissemination of academic knowledge in Medical education are among the most important and essential requisites of academic scholars in the relevant field. In developing countries like India, such experience and skills are rarely taught, transferred and shared in the academic curriculum. This multi-authored book is a sincere attempt to help the faculties of medical institutions, young research workers, medical and allied life science graduates and also the reviewers, on these issues."

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- The chapters will give the basic concepts for research and publications to improve the skill of medical writing for medicos, educators, and researchers.
- The chapter on legal and ethical matter highlights some relevant issues, which will help the readers to avoid research and publication misconduct.
- The first edition has given more emphasis on writing the original research paper and case report.
- With continued support from the readers, in the subsequent editions of the book, other issues like how to write a postgraduate and doctoral thesis, project reports, critical review, and letter to editor, etc. will be dealt with for the benefit of readers, which will immensely help them while pursuing research and publications.

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