Pathophysiology of a scientific paper

ABSTRACT
Scientific paper writing for science journals is highly adroit, competitive, and laborious process. Scientific writing has a constant design, which is confounding for apprentice science writers. The huge amount of impediments is associated with scientific writing which may be reduced by applying some practices and guidelines. The basic structure of scientific articles mainly comprises of the title, abstract, keywords, introduction, methods, results, discussion, conclusion, acknowledgments, and references. The pathophysiological aspects which minimize the chances of publication of an academic paper are rarely discussed in the literature. Early career of physicians and researchers is not well acquainted with the components of scientific paper. This study established an approach to understand the basic characteristics of pathophysiology of scientific writing.

Key words: Pathophysiology; science and technology; scientific writing; writing tips

In this modern era of science and technology, scientific writing is gaining popularity among undergraduate, postgraduate students, physicians, and research scholars who are fascinated in a profession as an academic scientist.[1] Research paper writers understand the basic scientific writing skills[1,2] as it is vital to comprehend the anatomy and physiology of the various sections of the scientific paper. This article highlights the pathophysiological characteristics which should be avoided while writing the various sections of the scientific paper.

Title

The title is an extremely imperative section of an academic article. This is the first fragment that an editor, reviewer and reader reads, which helps comprehend the contents of the scientific paper. It gives the first impression to the readers about the article and makes him decide to either read it or leave it. The main pathophysiological characteristics, which minimize the importance of the title, are being too difficult to understand, not easy to catalogue and fascinate the readers.[3] If it is too long, too short, unclear, or humorous, the title dilutes the strength of the study. The large, unspecific title with abbreviations does not convey the main idea to readers.[4,5] A poor title does not comprise of the basic key words, which reflects the core contents of the article. “A poor title is like a quarantine sign; the readers read it and go away”[3] The title must be simple, small, and explicit without any abbreviations and biased representation [Table 1].[3]

Abstract

The abstract is the very vital part of the scientific manuscript. The readers frequently read the abstract and decide to read the article or move on. A clear, concise, short and expressive abstract serves as a core for the manuscript.[6] A well-written abstract sets the tone for the article and develops an interest among the readers to read it and describes the evidence.
from the segments of the article using a summary of the background, methods, results, and conclusions.[7] The main pathophysiological features of an abstract are failing to describe the major findings of the article. A short abstract with insufficient information and a lengthy abstract with unnecessary details or unclear ideas are the major drawbacks of the poor abstract. These often confuse the readers, and they stop reading the article, giving it a miss [Table 1].

**Methods**

The method section is the most important part on which the excellence of the article is grounded. It allows the learners to understand the basic methodological aspects of the study and this section also provides information on which the study’s validity is judged.[10] It contains evidence to enable the readers to understand “what was done, where it was done, and how it was done”. The study “design, settings, control, exposed or treatment groups and variables measured” should be discussed stepwise in the methods section. It is also essential to provide the “study protocol, inclusion and exclusion criteria, sample size”, grouping,[11] materials, equipment, data collection, experimental handling, measurements and procedures. A poor method section fails to provide this crucial information [Table 1].

**Results**

The results section is the core of an academic paper for reporting the data to justify the conclusions.[11] This section, emphasizes the major findings in a balanced progression, reports both negative and positive findings, organizes the data in tabular or illustration format and provides associations, variances and magnitude of the findings with adequate interpretation. It is crucial to avoid discussing or

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**Table 1: Pathophysiological features in various sections of a research article**

| Title | Abstract |
|-------|----------|
| Too small or too lengthy | Too short or too long |
| Ambiguous | Contains over 300 words |
| Unable to attract the readers | Missing important information |
| Too difficult to cognize | Fails to summarize main findings |
| Not easy to catalogue | Fails to follow structured or unstructured pattern |
| Poor description of the manuscript | Citing reference |
| Contains abbreviations | |

| Introduction | Methods |
|--------------|---------|
| Unable to identify the subject area | Fails to discuss study design and settings |
| Poor settings | No inclusion and exclusion criteria |
| Irrelevant literature | No description of sample size and groupings |
| Unable to summarize the existing problems | No description of measuring tools |
| Unable to discuss the hypothesis and problems | No statistical tools description |
| Fails to clarify rationale and gaps | No Ethical statement |
| Poor citations with old references | Poor data analysis |

| Results | Discussion |
|---------|------------|
| Fails to provide key findings | Fails to answer to testable hypotheses |
| Reports only positive findings | No description of results with other’s findings |
| Unable to report negative results | No discussion of contradictory findings |
| Unable to discuss differences and relationships | No alternative explanations |
| Poor description of “significant” and “non-significant” findings | Discussion of prior work without references |
| Lengthy analysis and duplication of information | No discussion of study strengths & limitations |

| Conclusions | Declaration |
|-------------|------------|
| Too concise and not clear | Poor acknowledgement |
| No reporting of principal findings | No declaration of ethical statement |
| Highlighting unproven findings | No declaration of conflicts of statement |
| No accuracy | No declaration of study funding |
| Vague and biased | No declaration of any association with journal etc., |
| No satisfying ending | |

Avoid all above pathophysiological features while writing the various sections of the scientific paper
interpreting the results reporting background information to explain the findings.[11] The results section should include both text and illustrations to provide better understanding of the theme.

Discussion

The discussion piece is the most important component of the scientific paper, it provides clarifications on synthesis of the findings and issues. This section should start with the obtainable main study findings, and should debate the results with the findings of others for providing enough interpretations. The author discusses the contrary findings with explanations and reliable reasons using the standard references. The discussion section should be like an inverted pyramid, from general to specific, and it should relate the findings with that to the literature. Before concluding the discussion, the study’s potential strengths and limitations should be identified.[12]

Conclusion

The conclusion is the most significant and last part of the scientific paper, it must summarize the entire article as it is what readers always recall. The conclusion section must cover the principal findings and should be considered as the take-home message. The authors provide factual scientific justification and suggestions. The conclusion section should contain an enjoyable ending to the reader’s utmost satisfaction.

To understand the pathophysiological aspects in the various sections of the scientific paper, it is essential to identify the basic characteristics, structure and functions of an academic article. The author(s) also understand the pathophysiological processes in the various sections of the scientific paper that minimize the chances of publication of the scientific paper. The researchers must learn the art and science of the scientific paper writing.

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Conflicts of interest

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