



Turning Your Presentations/Posters to Publications

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Abstract

A scientific manuscript or paper is invariably the ultimate goal of most scientific endeavors and in a majority of cases, the final manuscript often begins as an abstract submitted to a conference to be presented as either a poster or an oral presentation. It is practically possible for authors to use a conference presentation as a basic template to expand and write a complete manuscript. However, it is imperative for authors to acknowledge the limitations of these abstracts and make attempts to improve the quality of work before embarking on writing a full-length manuscript. This article aims to provide a structured approach to how to write a paper primarily based on a conference abstract, along with examples and limitations.

Keywords

- manuscripts
- publications
- abstracts

Introduction

A scientific manuscript or paper is invariably the ultimate goal of most scientific endeavors and in a majority of cases, the final manuscript often begins as an abstract submitted to a conference to be presented as either a poster or an oral presentation. Although conference presentations contribute to research and a field, they do not carry the same level of importance as complete peer-reviewed publications. However, they can form the basis for the main paper, as they are usually structured in a similar manner to a scientific manuscript, and more importantly, it is possible that the actual research has been completed with no further analysis required. Furthermore, the author should already have a fundamental concept of the work, and a fair understanding of the current state of literature at the time of preparing the conference abstract.

This concept is applicable to a variety of forms of abstracts and manuscripts from case reports to original articles.¹ Hence, it is imperative to understand the similarities between a conference abstract and more importantly under-

stand the process of writing a manuscript while taking into consideration the limitations of a conference abstract. Scientific manuscripts need to be well-organized, and able to present the need for the study, methodology, obtained results, and inferences in a clear, comprehensible manner.^{2,3} There are certain established guidelines and scientific writing principles that are often the key to producing a well-structured manuscript.^{4–6}

This article aims to provide a structured approach to how to write a paper primarily based on a conference abstract, followed by a few examples and limitations. It is imperative to understand that although there is no fixed single approach to this, with each author or group having their own perspectives and approaches, the basic fundamental approach tends to remain consistent.

Basic Structure of a Scientific Manuscript

In principle, the fundamental structure of a conference abstract and full paper is very similar. The difference lies

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in the extent of details provided in the conference presentation, a limitation that primarily exists due to the basic requirements of this in contrast to a full paper (►Fig. 1). The usual structure of both includes:

1. Title
2. Introduction: Basis and rationale for the study
3. Material and methods: How the study was performed
4. Results: What were the main findings
5. Discussion: Implications and inferences drawn from the results
6. Conclusion: Summary statement of the study and results, the “take-home message.”

In addition, the paper will include an abstract which can usually be written by slightly modifying the conference abstract.

Building off an abstract submitted for presentation makes the manuscript writing process easier owing to the fact that the groundwork has already been done and each section only needs to be expanded upon in a logical and clear manner.

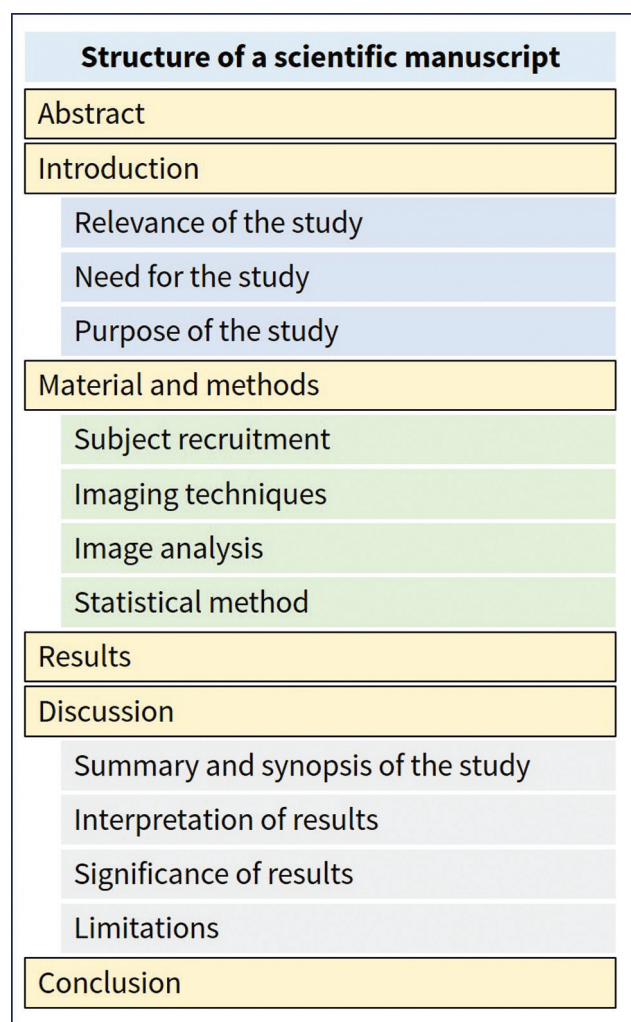


Fig. 1 Example of a standard structure for a radiology-based scientific manuscript.

Drafting Each Component of the Manuscript

The fundamental problem usually begins with a lack of clarity on where to begin when writing a manuscript, that is, whether to start with the introduction, the methods, or with creating the figures. One approach, which may be useful in the context of radiology-related publications would be to start with creating the necessary figures and tables, particularly when a conference presentation already exists. Although figures may have been created for the presentation, publication-quality figures often require more nuance and detail.⁷ The benefit of this approach is that the figures and tables provide a point of reference while writing the manuscript and offer a better flow of thoughts and structure to the results and discussion. Once these components are prepared, the author can choose to either start with the introduction or complete writing the methods, the latter of which is more factual and straightforward.

As applicable to any form of scientific publication, all attempts should be made to avoid plagiarism. Often authors copy text directly from other publications into the manuscript they are attempting to write, with the intention to paraphrase or modify later, particularly in methodology and discussion. It is recommended that authors refrain from this practice and make efforts to read, interpret findings from other manuscripts, and then paraphrase. This method may help reduce the possibility of plagiarism.

The next sections will discuss the approach to each component of the manuscript in the context of a conference abstract, that is, presentation or poster.

Title

The title of the final manuscript may occasionally and sometimes may need to be different from the title of the conference abstract. The latter may be due to additional analysis, copyright issues, word limits, etc. A well-chosen title plays a significant role in conveying the main characteristics of the study. It needs to be succinct and should try to inform the reader about—patient population, disease, and imaging technique. If relevant, the main finding of the study can also be included in the title. For example, “*Three-dimensional neuromelanin-sensitive magnetic resonance imaging of the substantia nigra in Parkinson’s disease*” informs the reader about the method, region of interest, and patient population. While “*Microstructural abnormalities of substantia nigra in Parkinson’s disease: A neuromelanin sensitive MRI atlas based study*” informs the reader about the finding of the study, disease population, and method. It is advisable to avoid uncommon abbreviations in the title.

Introduction

The introduction forms the basis for the entire paper, as it provides the whole rationale and relevance for the study. A similar concept is applicable to the introduction provided in the conference abstract; however, it will require to be expanded upon in the paper. In general, the introduction needs to cover the following domains:

Relevance of the study: This is the introduction to the problem statement and should include a brief statement about the disease, the specific area of interest, and why imaging is important for the disease.

Need for the study: This is perhaps the main part of the introduction that justifies the need for the study by highlighting lacunae in current knowledge by defining the shortcomings of previous studies or methods. This section should also explain how and why the present study will fill these gaps.

Hypothesis of the study and approach: This paragraph should aim to summarize the relevance and need for the study following which the hypothesis study and the approach to evaluate it must be listed.

Materials and Methods

The purpose of this section is to explain in detail the entire experimental procedure. This is necessary to demonstrate the scientific rigor of the study. Owing to word count limitations in the conference abstract, only limited information can be provided. However, a paper needs to include every detail starting from patient selection to statistical method. The method section can be organized as follows (please note that this is in the context of a radiology paper with image acquisition and processing):

Subject recruitment and clinical evaluation: The location of the study, type of study (prospective or retrospective), method of sampling, ethical approval, etc., need to be mentioned in the first paragraph of this section. Following this, details of the study population, that is, inclusion and exclusion criteria should be described here. A flow chart describing the workflow might be beneficial.

Ethical statements: This is a section that is of paramount importance and may occasionally be overlooked when converting posters to papers, as these details are not explicitly stated in presentation abstracts. The authors should ensure that appropriate ethical approvals were taken prior to initiating the project, and based on journal policies for blinding, the ethical approval number should be mentioned. When applicable, statements regarding informed consent from subjects should also be included. Furthermore, the authors should ensure that patient confidentiality is maintained in the manuscript, particularly in the context of radiological images, such as magnetic resonance imaging or computed tomography images. Patient details, which are often present in the images, should be either cropped out or masked. Finally, in this context of ethical considerations, the authors should ensure that all images used in the manuscript are original, and if not, appropriate permissions are sought prior to use.

Imaging techniques: This is a very crucial component of any radiology-based paper. All details of the acquisition, that is, image acquisition parameters should be listed here. This is necessary to help the reproducibility of the study for future readers.

Image analyses: Information should be provided about all steps of image analyses whether it may be qualitative or quantitative. All criteria, ranking systems, and thresholds used should be clearly mentioned, with all appropriate

references included. In the case of image analysis with software or scripts, the version number should be stated.

Statistical method: Interpretation of obtained values requires the utilization of appropriate statistical tests. All used tests should be reported along with the level of statistical significance, values used as covariates, and corrections for multiple comparisons. Tests used for correlations and variables used should also be reported.

Data availability: Several journals may often ask for data availability statements. These are statements that enable the readers to know if the data used in the manuscript is accessible to download by readers for their use. Journals usually have their own formats, and authors should read author instructions carefully to check for requirements and suggested formats. Some examples of data availability statements are: "Data are publicly available in the XYZ repository: www.xyz.com/abc," "All data related to this manuscript are available in the **Supplementary Material**," or "data associated with this manuscript are not publicly available; however, this may be shared by the corresponding author upon reasonable request."

Results

The results section of a manuscript is probably the core of the study, as it reports data that can prove or disprove the hypothesis of the study. Within the conference abstract, the results reported are usually the main results of the study, and they are reported in a very brief manner with a limited number of supporting figures or tables. In a paper, this has to be expanded upon with all pertinent details of the results provided. This section should be organized similar to the methods with clinical data preceding the imaging results. It is imperative to understand that in this section, the results should be objectively reported rather than interpreted, as the latter should be done in the discussion.

Tables and figures can act as a guide to aid in organizing the results. For instance, demographic and clinical details organized in a tabular format can be helpful in providing all the results including comparisons, rather than paragraphs of text which may be difficult to objectively follow. From the perspective of a paper associated with radiology, the type of figures utilized is significantly influenced by the type of paper.⁷ For instance, if it is a case report or case series, figures of individual subjects with relevant sequences and variations will be needed. On the other hand, for a group-based analysis, a single representative image may suffice. Authors should ensure that no patient identifiers are visible in the shared images. If there is image analysis involved, a flowchart describing the steps of analysis will be beneficial. The remaining figures should summarize key results and should be self-explanatory, that is, a reader should be able to understand the results by reviewing the figures and their legends. Graphs are immensely useful in demonstrating the comparison of quantitative results, and care should be placed in keeping them simple with appropriate color choices. The results must not simply duplicate what is in the figures or tables, rather the text should succinctly and precisely summarize the key findings. It is also important to remember that figures should always be high quality and that figure

legends should include expansions for all abbreviations used in the figure. Finally, negative results are as important as positive results and should not be omitted.⁸

Discussion

The discussion section of a paper is necessary to tie together the purpose of the study and the methods and justify the obtained results. It is meant to provide the author's interpretation and implications of the results. A conference abstract and presentation will typically not include a detailed discussion, it is usually brief and very restricted. In contrast, the paper should have an in-depth discussion section which is not simply a long-winded review of previous papers, rather it should be an interpretation of obtained results in the context of previous knowledge. The suggested structure of the discussion is as follows²:

Summary and synopsis of the study: The first of the discussion should provide readers with a brief background and summary of the study—the need for the study, method, and key results.

Interpretation of results: In this section, the authors should provide an interpretation of the obtained results. It is necessary to emphasize the meaning of each result along with discussing and supporting them in the context of existing literature or providing a reasonable plausible explanation. A brief tabulation of previous studies and the present study may help the reader better appreciate the obtained results. As mentioned earlier, negative results should also be discussed, as they can make valuable contributions to the understanding of the condition being evaluated.

Significance of results: The authors should attempt to explain the importance of the obtained results. Particularly in the context of how the study can impact the underlying pathogenesis of the disease under evaluation, and how it can perhaps impact patient care in the future.

Limitations: This is an extremely important section of the manuscript, as it explicitly states the drawbacks of the study. It will help the readers and reviewers be aware of the limitations of the study which may have influenced the obtained results.

Conclusion

This is the concluding section of the manuscript which should summarize the whole study and provide future directions. This information may be similar to what was provided in the conference manuscript.

References

In comparison to a paper, a conference abstract often does not include citations. A paper should have all required citations, and the author should ensure that the number of citations and formatting should adhere to journal-specific requirements.

Examples of Converting a Conference Abstract into a Full-Length Manuscript

In this section, a few personal examples are discussed, wherein a conference abstract was converted to a full-length manuscript. The readers are encouraged to review the

abstracts and posters that are attached as supplementary material and read the full published papers that are cited to better understand this process. Example 1: In this example, all the analysis was performed before the conference abstract was written, and the premise of the full-length paper is almost identical to the abstract, with the exception of a change in the title. The abstract was entitled "*Functional connectivity of the basal ganglia thalamocortical and cerebellothalamocortical networks in tremor-dominant Parkinson's disease and essential tremor plus syndrome*"⁹ (► **Supplementary Material: Example-1**); however, when the final manuscript was published, the title was changed to "*Differential patterns of functional connectivity in tremor dominant Parkinson's disease and essential tremor plus.*"¹⁰ The primary reason was this to include some information about the obtained results in the title instead of only describing the method and patient groups. In addition, the figures were modified to include correlation plots. The next two examples highlight situations wherein, there are several differences between the conference abstract and the full-length article and reasons for those changes. Example 2: This full-length initially started as this conference submission entitled "*Aberrant structural connectivity of the executive network in Progressive Supranuclear Palsy*"¹¹ (► **Supplementary Material: Example-2**). However, upon attempting to write the manuscript, which was finally entitled "*Abnormal structural connectivity in progressive supranuclear palsy-Richardson syndrome,*"¹² we realized that it is more appropriate to focus on a specific subtype of progressive supranuclear palsy and explore all networks rather than just a single network. The primary dataset was the same; however, a subset of data was extracted, and additional analysis with a different approach to the problem was performed. Example 3: In this example, although both the conference abstract and full-length paper have similar titles —"*Probabilistic tractography based structural connectivity of the tremor network in tremor dominant Parkinson's disease and essential tremor plus syndrome*"¹³ (► **Supplementary Material: Example-3**) versus "*Probabilistic Tractography-Based Tremor Network Connectivity in Tremor Dominant Parkinson's Disease and Essential Tremor plus.*"¹⁴ There are significant differences between these two versions. Following submission of the conference abstract and feedback, we realized that was a better method of performing probabilistic tractography, and we also realized that we could make a better choice for regions of interest. Based on this, the entire analysis was repeated with a different method, following which, the full-length manuscript was written.

Pitfalls of Converting a Conference Presentation into a Manuscript

It is pivotal to remember that there are limitations to conference abstracts. As mentioned earlier, they are short with restricted information provided, and it is imperative to understand that the review process for a full-length manuscript is far more rigorous and thorough, with stringent criteria on several fronts.

Although on occasion, conference abstracts may be submitted for a conference after all aspects of a project are completed, more often than not, they may only be from pilot data with limited methods, preliminary results, and limited interpretations. This is not enough to convert into a complete full-length publication, and authors should be insightful of this fact, as such a manuscript may invariably be of substandard quality.

One common limitation is providing insufficient details regarding the methods. For instance, in an abstract, the method for measuring cortical thickness may be limited to “*Freesurfer version 7.0 was used to measure cortical thickness.*” However, complete details and steps involved need to be provided in a full-length manuscript, as the readers should obtain a good understanding of the process after reading the method section.

Another important limitation is the tendency to overinterpret results. As stated earlier, conference abstracts may often be pilot data, with limited analysis. A result that is assumed to be correct may change when further subjects are added, or if further analysis is performed. Abstracts may be written based on even a single observation; however, unless it is a very crucial or critical observation, it may be inadequate to convert into a complete and comprehensive manuscript.

Conclusion

It is practically possible for authors to use a conference presentation as a basic template to expand and write a complete manuscript. Each section of a conference abstract should be expanded upon in a logical and concise manner. However, it is imperative for authors to acknowledge the limitations of these abstracts and make attempts to improve the quality of work before embarking on writing a full-length manuscript.

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Conflict of Interest

None declared.

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