



How to write a scientific abstract: a guide for medical students

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Website & IT, NSAMR, 2013
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What is an abstract?

Broadly, an abstract is a short overview (usually 200-250 words) of a project you have undertaken. The project could have been research, audit or a literature review.

Why should I write one?

An abstract gives the reader a quick overview of your project and lets them decide if the topic of your research matches their interests. It will usually be the first thing they read about your work, so it is important to get it right to capture their interest. You will be invited to submit abstracts to conferences to allow the conference organizers to decide if the topic of your project is relevant to the conference, in which case you may be invited to present your findings as a poster or an oral presentation. You will also include abstracts as part of manuscripts when you submit your work to journals.



Objective

This short guide aims to serve as a practical introduction to producing a concise and effective abstract which serves to best communicate the findings of your project to the reader.

How do I write an abstract?

The key to writing an abstract (or anything in academia!) is structure. Imagine if you had to read a block of text with seemingly no head or tail – it would be pretty irritating! Structuring your abstract not only makes it easy for you to write it, but also makes it easy for the reader to follow the ‘story’ in a logical way.

Most abstracts are structured under the following headings:

Background/Introduction

This gives the reader a starting point. It does not have to be very detailed, but it does need to get the salient points across. Because you have a word limit, it is best to only include information that is relevant to the aim, method, results or conclusions.

You may also need to tailor this section to the ‘level’ that you expect the audience to have. E.g. if you are submitting an abstract about genetic Parkinson’s disease to a movement disorders conference, you might start with “The D231Q mutation in the PARK1 gene produces...” Whereas if you were submitting the same abstract to a general scientific or student conference, you could begin with “Parkinson’s disease can be genetic, most commonly with the following mutations...”

Aim/Objective

This is arguably THE most important part of the abstract – if your aim is not clear, the reader will not be able to decide from the methods section if your methodology is appropriate, or from the results section if your project has been successful in meeting its aims.

The aim must be short, relevant, specific and measurable. To continue with the example from above, the aim for the study could have been “To investigate if this genotype of inherited Parkinson’s disease is more responsive to levodopa than...”

Methods

This section is variable as some projects have methods that can only be described well in detail, whereas others can be described succinctly.

Think about the need to include certain details in this section – will knowing the details affect the conclusions that the reader draws from the study? For example, it may not be important to include the exact make and model of a hip prosthesis when comparing surgical vs. medical management of osteoarthritis, but it will be important if you are comparing outcomes from two different manufacturers!

Identify your outcome measures in this section. How will you measure what you set out to measure in your aim/objective section? Which parameters will you compare between groups? To continue with the hip prostheses of different makes example from above, your main outcome measure might be the rate of infection for each make. There may be other (secondary) outcome measures such as length of stay in hospital and activity scale ratings, but you do not need to include them in the abstract if you are limited by word count.

It may be a good idea to include what demographic information you collected such as age and gender. Other demographics depend on the kind of study; for example cardiovascular studies often include ethnicity, psychiatry studies may include level of education and so on.

Also, it is generally a good idea to include a sentence about how the data were analyzed, including important statistical methods such as the use of t-tests or ANOVAs.

If you have the space, you could include details about how you eliminated bias or minimized their effects. Details about data processing are usually of no significance.

Results

This section can be kept brief by simply including the mean values of the outcome measures between the groups that are being compared, and the relevant p -values. In order to keep things brief, it is usually not necessary to include the test statistic (for example the ‘ t ’ or ‘ F ’ value) in comparison studies. However in correlation studies, statistics such as the ‘ r ’ value are usually included in the results section along with the p -value.

For qualitative studies, you could include in this section the dominant themes emerging from your research.

Conclusions/Implications

This section is sometimes combined with the ‘Results’ section. It is the broad impression that you have established from your results. Essentially, it is one or two

sentences about the main finding from your research in relation to your aim/objective. It is a good idea to relate it back to your aim by using the exact (or almost exact) words that you used previously in order to make it very clear to the reader what your final conclusion is.

If your conclusions imply that some sort a change is necessary, such as a change in clinical practice or a new avenue of research to pursue, this implication is also included in the conclusions section and often comprises the final sentence.

It is not a good idea to include any specific numbers or values in this section, nor any new data, as that is what the results section is for!

Key points



- Use headings!
- Think about your audience before you write your abstract
- Make your aim as clear and specific as possible
- Put yourself in the reader's shoes and think what would make it easier for the reader to understand what your project was all about.
- Think about terminology and abbreviations – is there a way you could replace difficult or niche words with easily comprehensible ones? Have you explained what each abbreviation means the first time it is used?
- If in doubt as to whether to include particular information, ask yourself if including that information will change how others understand your project.
- Ensure that your conclusions match your aims – use similar words and phrases and do not exaggerate the scope of your conclusions.
- Keep to the word limit!
- Get a friend or a senior colleague to critique your abstract.

Suggested external resources

- The Art of the Abstract by Selvanathan et al: <http://student.bmj.com/student/view-article.html?id=sbmj060270>
- Aresty Center for Undergraduates: <http://aresty.rutgers.edu/sites/default/files/pdf/aresty/abstract.pdf>