



## Science of writing paper

Writing a paper for publication in a medical Journal is more of a science than an art. Every author who sends a paper for publication confidently believes that his paper is very good and unquestionably merits publication. He is surprised and disappointed to find the paper rejected as happens very often.

### Attributes of a good paper

An essential attribute of a good paper is that the topic or subject of the paper should be of interest to the reader of the concerned journal. Ideally the paper should provide good new information to the readers or throw light on those aspects of the subject which are controversial. Repeating studies already done time and again makes no sense and wastes time, energy, money and manpower. The study must have a definite aim directed to acquire new knowledge. You must study the subjects scientifically by applying modern methods of conducting research. The study must be planned meticulously well before the first participant is enrolled. Ethical conduct of research is mandatory today. No harm should be done to the subjects voluntarily participating in the research. They should be subjected to the least inconvenience. Their informed consent must be obtained in writing. No journal would publish a paper unless the research study is approved by the ethics committee. The purpose of the ethics committee is to protect the interests of the study subjects. The study in all detail must be approved by the ethics committee before it starts. The ethics committee also ensures periodically that the study is actually being conducted as per the plan approved by the committee.

The goal of every study is to be able to draw universally applicable valid conclusions. In other words the study must have good power. Although 90% power is desirable a minimum power of 80% is obligatory. The number of subjects needed to be studied for achieving this power is arrived at with the help of a biostatistician. An underpowered study is unlikely to be accepted by the editors. Studying a number larger than necessary amounts to waste of precious resources.

We are living in an era in which we must practice evidence based medicine and this evidence must be tested on the touchstone of statistics. This inevitably means that a biostatistician must be a part of any good research study. He

helps in planning the study besides analyzing the results and evaluating them statistically.

### Choosing an appropriate Journal before writing a paper

A good research study forms the basis for writing a good scientific paper. A poor study, howsoever well it might be written, stands no chance of getting accepted for publication. Poor research is poor science. No good journal would publish poor science. Hence sending a paper based on poor research to a good reputable journal may amount to waste of time and energy. One must choose an appropriate journal for publication of paper and write the paper as per the requirement of that journal. In fact, it is ideal to choose the journal even before starting your research study!

### Writing of a scientific paper

Before starting to write the paper one must study the instructions to authors given by the journal to which the paper is intended to be sent for publication. Almost all journals print these instructions regularly in the issues of the journal. These instructions must be studied very meticulously in great details and followed to the dot. Not doing so results in queries from the editor, rewriting and resubmission of the paper, at least portions of it, and waste of precious time and earlier efforts. Besides it could involve a lot of work which, in fact, should have been done initially to start with. Unfortunately, although authors are not blinded they often remain blind to instructions to authors.

The format of actual writing of a paper is more or less standardized and is accepted by most of the clinical journals. The standard format goes by the acronym of IMRAD which stands for Introduction, Methods, Results and Discussion. Each one of these deals with different aspects of the research study. Junior and inexperienced authors fail to grasp this resulting in unnecessary futile repetition and duplication of facts and findings under different headings of IMRAD. Printing of a journal is an expensive enterprise and every little space in the journal costs substantial amount of money. Editors hate any space being wasted by such purposeless repetitions. Secondly, journals are meant for readers who, directly or indirectly, pay their subscription to the journal. Clinicians and

scientists are hard pressed for time. Their time should not be wasted in reading unnecessary repetitions. To give an example authors tend to repeat the same data in the text, tables and figures. Editors do not allow this. Needless to say that findings of the study described under the section of Results often need to be mentioned in brief under the section of Discussion. Authors need some experience and maturity to avoid unnecessary repetitions. Senior authors of the study must pay good attention to proper writing of a paper.

Appropriate writing of the paper's title and the abstract is of utmost importance. Authors must realize that most readers read the title, some read the abstract and only a few read the entire article. The title could be catchy to attract readers' attention but it must be faithful to the research study. It cannot misrepresent the study. Writing a good abstract requires skill and experience. The abstract must be factual and goad the reader to read the whole article. Abstract is so important that most authors choose to write it after the paper is written. Most journals insist structured abstract. But the structure of the abstract varies from journal to journal. The number of headings in the abstract vary in different journals. Capsule is not printed by all journals. But many journals print the capsule in the contents. Writing of the capsule is very important. It is not the same thing as conclusion of the paper. It should give the essence of your study in a nutshell in two or three sentences. Most readers would scan the contents of the titles of the papers published and the capsules of the papers to make their decision regarding the articles whose abstracts they would consider worth going through.

The last but certainly not the least important section of a paper is its reference list. In fact it is a very important part of a paper. Unfortunately it is most neglected. It is mandatory that the authors must go through the references they are quoting - at least the relevant sections. Unfortunately many authors merely include references quoted by other authors perhaps to impress the readers with their show of scholarship. This often results in incomplete and erroneous listing in the reference list. The unfortunate victim of this is the reader of your article who desires to go through a reference quoted by you but has to struggle to find it due to erroneous or incomplete listing. Most journals restrict the number of references to be listed in an article. References quoted must be recent and relevant. There is no justification for the author to quote reference he has not bothered to read.

### **English Language**

Most authors are not proficient in English, it not being their mother tongue. Besides, like every language, English language has its own peculiarities, nuances and strict grammatical requirements. Authors are often tempted to impress the readers by their proficiency in the English language by using flowery and literary writing. One must remember that his paper is a scientific writing which must convey the reader precisely what the author wants. Authors would do well to write in simple English avoiding long sentences, complicated clauses and decorative words.

### **Conclusion**

A poor research can never be improved after the study is done. Poor writing of a good research study can be improved at various stages by taking help of those proficient in English language, by senior colleagues and to some extent even by the editorial team. But there is no substitution to meticulously following instructions meant for authors.

**We are happy to inform that all those who conduct Clinical Research and all those who read a Journal should take note of an important development. Indian Council of Medical Research has started a National Clinical Trial registry open to the public at [www.ctri.in](http://www.ctri.in). Every researcher wanting to conduct a clinical trial must register his/her trial on [www.ctri.in](http://www.ctri.in) before starting the trial. Our Journal makes it mandatory that new clinical trials starting after 1st January 2009 must be registered with the Central Trial Registry at [www.ctri.in](http://www.ctri.in) before the trial starts. In fact, the Journal desires that any clinical trial starting in the year 2008 should also be similarly registered. Needless to say that the clinical trials submitted for publication to the journal would receive top priority for processing and publication if it carries this Registration Number.**

*Lastly, our readers would be very happy to note that the Indian Council of Medical Research has now made cochrane Review data available to Indian Public free of cost.*

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