

Chapter-14

How authors can take benefit from current advances in Information Technology

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Information Technology has revolutionized all aspects of life, field of medicine being no exception. Availability of internet facilities and free online journals have made life easier for those interested in medical writing including researchers and authors. However, it's a double edge sword as on one hand it is a valuable tool for most medical writers which helps at every step of paper writing from literature search to accessing full length articles as well as managing drafts, references while on other hand it acts as the main sources of today's plagiarism among the students, faculty and researchers of any profession.¹

Writing a good quality research paper which is publishable is not only time consuming but at times frustrating for the beginners. With the advancement in information technology researchers have access to tremendous opportunities which if used wisely can be a great blessing. The use of information technology is already contributing in various ways to enhancing healthcare and improving the quality of life.

Following is a step by step approach for authors to take benefit from advances in information technology.

Literature Search:

This is the most important aspect of medical writing. A good literature search before starting any project means 50% of your work is already done. Information technology can be

of valuable help in this regard. After having chosen your topic and audience, start by checking the literature and downloading relevant papers in order to compile the background information related to selected topic. Many good quality manuscripts can be rejected if important relevant articles are not cited. Therefore, credible databases should be thoroughly searched before writing a paper.

Some of the important online databases, libraries and catalogues are:²

- MEDLINE/PubMed
- Excerpta Medica/EMBASE
- Scopus
- Google Scholar
- Thomson Reuters' Web of Science
- Cochrane Library
- Database of Abstracts and Reviews of Effectiveness (DARE)
- Cumulative Index to Nursing and Allied Health Literature (CINAHL)

MEDLINE is the National Library of Medicine (NLM) journal citation database. It provides more than 23 million references to biomedical and life sciences journal articles and includes citations from more than 5,600 scholarly journals published around the world.³

In the Medline each reference to the medical literature is indexed under a controlled vocabulary called medical subject headings (MeSH). These MeSH terms acts as a key to search the medical and dental literature.

Effective use of MEDLINE database can be difficult and frustrating for the beginners as large number of articles are retrieved by simple searches. However using MeSH terms with certain limiting words like publication type or date is helpful in getting the desired articles. Similarly clicking the link to "Related Articles" will enable the searcher to collect large number of relevant articles which otherwise might have been missed.

PubMed has more than 26 million references including the MEDLINE database plus in-process citations, “Ahead of Print” citations that precede the article’s final publication in a MEDLINE indexed journal. Citations to author manuscripts of articles published by NIH-funded researchers and Citations for the majority of books available on the NCBI Bookshelf are also available. PubMed citations often include links to the full-text article on the publishers’ Web sites and/or in PMC and the Bookshelf.

- **PubMed Central (PMC)** While PubMed contains only the abstracts and related links to articles, PMC contains full-text biomedical and life sciences journal articles. Therefore it saves a lot of valuable time if you can find your desired article on PMC.³

Google Scholar:

Google Scholar is another freely accessible web search engine which contains the full text of scholarly articles on a wide variety of subjects. Literature across an array of publishing formats and disciplines is available on this site. It includes most of the peer reviewed online journals in addition to books, Theses and Dissertations. This search engine is a valuable tool for writers to accomplish their task.

Pakmedinet.com:

Pakmedinet is Pakistan’s largest online Medical Database containing Research articles published in Pakistani Medical Journals. Pakmedinet also provides FREE help regarding reference search and biostatistics. It serves as a good source of retrieving information regarding local published data from Pakistan.⁴

Statistics and information technology:

Good statistical analysis can make or break the original article. While it is extremely important to involve an experienced statistician before initiating a project, some basic statistics can be performed by authors if they familiarize themselves with the

basics of statistics. Various online tools are available which can be extremely helpful, the most commonly used software's are discussed here.

1. SPSS Statistics

It is a widely used software package for statistical analysis. The software name originally stood for **Statistical Package for the Social Sciences (SPSS)**. It is a very useful tool for ordinary researchers to do their own statistical analysis. Additionally, data management (case selection, file reshaping, creating derived data) and data documentation are added advantages.

2. Nvivo

Nvivo is another qualitative data analysis software for researchers working on Windows and Mac operating systems. It needs some practice before writers can effectively use this.

Plagiarism and information technology:

The World Association of Medical Editors defines plagiarism as - “the use of others published and unpublished ideas or words (or other intellectual property) without attribution or permission, and presenting them as new and original rather than derived from an existing source.”⁵

All authors must be aware that plagiarism is considered as one of the most serious forms of publication misconduct and is one of the major reasons for article rejection and retraction by any journal.

Detection of Plagiarism:

All the ethical writers must check for the unintentional plagiarism and text duplication by using plagiarism detection software before submitting to any journal. Good reviewers also use plagiarism detection tools in order to avoid false publication practice by both intentional and unintentional authors. In instances where plagiarism is not detected during review process, the editors of the journal finalize the fate of the article based on the extent of plagiarism by using powerful plagiarism detection software.

The following are few freely as well as commercially available online plagiarism detection tools which helps in screening for matching text in the article submitted by the authors.⁶

1. Cross Check™
2. <http://www.ithenticate.com>
3. <https://turnitin.com/static/index>
4. Viper ([http://www.scanmyessay.com/plagiarism-free software](http://www.scanmyessay.com/plagiarism-free-software))
5. Software like eTBLAST
6. SafeAssign™
7. WCopyFind™
8. <http://www.checkforplagiarism.net>
9. <http://www.grammarly.com>
10. Sometimes simple Google Search also helps in detecting plagiarism.

Reference management software:

Reference writing is a skill that few authors are capable of doing. The correct citation of references is mandatory not only to achieve scientific credibility but also to acknowledge the work done by previous authors in order to avoid plagiarism. Incorrect reference writing is another reason for an article rejection. Now a days various software's are easily available which helps in properly writing and managing references. They are easy to use and saves a lot of time.

Many commercial, and free citation management programs are available. Some of them are listed as:

- EndNote (www.endnote.com),
- Mendeley (www.mendeley.com)
- RefWorks (www.refworks.com), and
- Papers (www.mekentosj.com),
- Zotero (www.zotero.org),

Two of the commonly used reference management software are **Mendeley** and **EndNote**.⁷

EndNote:

EndNote is a software program that can be purchased online for personal or institutional use. There are two versions available, EndNote Desktop (for Windows and Mac operating systems) and EndNote Web which is internet based. After installing this program users can build their own reference libraries and can create personal database by downloading batches of references from various search engines like Medline or Google scholar. An important feature of Endnote is Cite While You Write (CWYW) module in which authors can simply paste the reference in the manuscript while writing and Endnote will scan the article and will place the citations accordingly as per selected writing style and a list of references will be created at the end of manuscript. However as it does not support mobile technologies and requires the use of more than one program which are some of the disadvantages.

Mendeley:

Mendeley is another commonly used program for references management. Basic program can be downloaded for free from internet. It provides >1 gigabyte (GB) storage space. Unlike Endnote Mendeley Desktop used in personal computers and Mendeley Web which is its internet based program are not separated from each other. Mendeley desktop runs on windows, Mac and Linux. Automatic extraction of metadata from PDF papers and full text search across papers is an added advantage. Additionally Import of documents and research papers from external website like PubMed, Google scholar etc. is also possible.

Thus effective use of citation management programs will result in accurate compilation, documentation and management of references in the manuscript to be published. These tools will find and retrieve references quickly and make it easy to record the reference completely including author's name, title of article, year of publication, journal name, volume, page numbers etc.

Conclusion:

Advancement in Information technology has positively impacted the working of authors. With judicious use and a little practice these online tools, programs and software's which are easily available to potential authors will help in enhancing the quality of research papers.

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