Anti-plagiarism software in biomedical literature

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"Your work is both good and original. Unfortunately, the parts that are good are not original, and the parts that are original are not good."

–Samuel Johnson

Plagiarism, described as an intellectual theft, is a serious form of scientific misconduct. Adequate literature exists regarding the definition, types and methods of detecting plagiarism in the scientific literature. Although the awareness about plagiarism seems to have improved, a significant degree of ignorance persists. Studies suggest that the prevalence of plagiarism is high amongst students in biomedical stream.[1] In developed countries, even the work by school going children are checked for plagiarism before accepting, but in developing countries, doctoral or postdoctoral thesis are not being checked appropriately for plagiarism. Many anti-plagiarism software have been developed and used from schools to colleges in various streams. Of these eBlast™, Crosscheck™, IThenticate™ and De` ja` vu™ are some of the widely used ones in biomedical science.[2,3] To protect the research integrity, the students' thesis or any sort of publication has to be ensured for its originality and a large part of responsibility vests with the guides and/or co-guides apart from the concerned student. Hence, it becomes essential for a teacher/instructor to know some of the essentiality of these softwares and what they can and cannot do.

All the above-mentioned softwares primarily check for the text similarity with previously published articles/essays. IThenticate™ (through WriteCheck™), in addition, has grammar engine, where it can also check for the usage and mechanics of English grammar. Except for IThenticate™, the other softwares are primarily linked to MEDLINE database. Although, MEDLINE is considered to be the most widely used search engine in biomedical literature, many journals are not indexed in MEDLINE and therefore do not feature these nonindexed journals in its retrieval system. Furthermore, if a journal allows access to full-text under subscription, an MEDLINE search will extract only the title of the article with or without abstract. Hence, these softwares will be able to match the texts only with either of these. This is of concern especially because, a recent study[4] has shown that for detecting even duplicate publications in MEDLINE, a full-text analysis is necessary rather than just matching with the abstracts. One the other hand, IThenticate™ has a wider access of around 37 billion web bases, 92 billion off-line works from academic journals and 300,000 dissertations or thesis.[5] All these softwares only test for similarity of texts with the currently available articles/essays. Hence, when a figure or any other nontext format is present in the work, the plagiarism effect remains questionable. As Google is the most frequently used internet search engine, manual search for this nontext information can be done to check for their originality. The databases of these anti-plagiarism softwares include only those articles published in English language. Hence, it becomes difficult to detect when they are copied from other language. Copy Catch™, Safe Assignment™, Desktop Plagiarism Checker™ offer multi-lingual support in determining the similarity index. There is no consensus regarding the score of this similarity index to consider that the work has been plagiarized. Some recommend 10%, others 30% and so on.[6,7] Further, the similarity index has to be associated with each section of the manuscript. In the case of a review article which is a collection from various original studies, the similarity score tends to higher and is bound to be. Whereas in case of original articles, it is acceptable if the similarity index is a little high in the methodology part of the article, but it should definitely

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be comparatively lower in the results section of the article. Furthermore, because of the journal policy, when the articles have to be submitted in a specific format, an article may be detected to have a higher similarity index when in fact it has actually been checked for plagiarism manually.[8] In addition, among the various types of plagiarisms, idea plagiarism wherein the scientific thought is being stolen will also not be picked up by any of these anti-plagiarism software tools.

Considering the prevalence of plagiarism in Indian law schools, The Bar Council of India has recommended the use of anti-plagiarism tools in the country's law institutions. No such steps have been initiated by the Medical Council of India despite large number of medical institutes and many instances of plagiarism.[9,10] Hence, we recommend a scheduled sensitization of students regarding the plagiarism, checking of all their thesis/dissertations for various types of plagiarism and rejecting if a vast majority of content similarity exist to be mandatorily done in all the colleges of India irrespective of field of education. The same sad state of affairs exists in many other developing nations. Although using these softwares may detect plagiarism (if it is present), we can get rid of this completely only by educating the students as shown by a study from the Birmingham University.[11] It is important to adopt the principles of good scientific practice and protect the research integrity.

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