

## Threats to Research Integrity

**Abin Varghese\* and Gigini George**

*Tutor, Bhopal Nursing College, Bhopal Memorial Hospital and Research Centre, Department of Health Research, Ministry of Health and Family Welfare, Government of India, India*

**\*Corresponding Author:** Abin Varghese, Tutor, Bhopal Nursing College, Bhopal Memorial Hospital and Research Centre, Department of Health Research, Ministry of Health and Family Welfare, Government of India, India.

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Publication is the final step in the research study through which the results or findings will reach out to the maximum number of scholars and to the scientific world. After publication, each article becomes a source for critique, post publication review and citation. Scientific publications and the citations associated with it are becoming the benchmark for academicians, research scholars, scientists, and health professionals in their arenas to get promotions and other credits. So, publishing at any cost is gaining momentum in the current scientific world. Henceforth the trend for publishing maximum number of articles in scientific journals without looking into the credibility has become a serious issue which has created a worry among the scientific community. The term plagiarism is now a day's quite often discussed in the scientific world. The term is derived from Latin words *plagere* which means to kidnap or *plagiatum* (stealing people). Plagiarism is using another individuals ideas, opinion, judgments, artistic work, tables, results, images in one's own work without giving sufficient credit to the source. The world association of medical editors (WAME) 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 the use of others' published and unpublished ideas or words (or other intellectual property) without attribution or permission, and presenting them as new and original rather than derived from an existing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" [1]. In 1999, the Committee on Publication Ethics (COPE) defined plagiarism as, "plagiarism ranges from the unreferenced use of others' published and unpublished ideas, including research grant applications to submission under "new" authorship of a complete paper, sometimes in a different language. It may occur at any stage of planning, research, writing, or publication: It applies to print and electronic versions" [2].

### Types of Plagiarism

There are various forms of plagiarism which are dishonest to the academic fraternity:

- **Direct Plagiarism:** Fully or partially copy the text, computer files, audio or video recordings without mentioning the primary source.
- **Self-plagiarism or salami slicing:** The plagiarism in which the author uses his own work in a new article without mentioning his or her previous citation in the reference.
- **Mosaic plagiarism (patchwork plagiarism):** When the author fails to write in his own words and "uses the same words or phrases or paragraphs of the original source" without giving adequate credit results in mosaic plagiarism [3,4]. An illustration for the case is when the author uses words, text and phrases from other articles and reuse them in a different manner in the new article contributes to mosaic plagiarism.
- **Plagiarism of Ideas:** When the author "uses the ideas or thoughts of some others and presents as his own" [3] without giving adequate credit to the original authors results in plagiarism of ideas. An archetype for the case: Laziness is a general mentality prevailing among students and they usually refer ideas and material from previously published articles to do their thesis.
- According to data from WAME - World Association of Medical Editors, precise definition of plagiarism is when copied six consecutive words [5,6] are in a continuous set of 30 used characters.

### Contributing factors for Plagiarism [7,8]

The most common factors responsible for plagiarism are:

1. Lack of sound knowledge regarding the ethical guidelines for publication and research work.
2. The authors from countries where English is an additional language because such authors will not be proficient enough to write the articles in their own words in English.
3. The sloth attitude of students has created less interest in doing scholarly work and so they will copy the textual material from previous published articles for their thesis since the university or institutions mandates the research dissertation as one of the eligibility criteria for awarding degrees.
4. The increased competition among scholars due to the pressure from the institutions where they are working,
5. The credits associated with publications such as fame and promotional avenues.

The revolution of digital world has an enormous influence on the scholarly world as it has made easy availability of online journals, database and other electronic material. The free access is a big boon for all scholars so that the reuse of material in any form is becoming quite common now a days. The digitalization has made and taught the scholars “copy-paste” as a specialized skill to be utilized in the scholarly world.

### Measures to prevent plagiarism

The initial step towards addressing the scientific misconduct and dishonesty were undertaken by U.S in 1992 with the establishment of the office of Research Integrity. The main aims of this organization were to promote scientific integrity, develop guidelines for scientific research and investigation of allegations of misconduct, especially in biomedicine. The model developed by U.S.A served as a background for the establishment of a variety institutions, university and organizations based on ethics in science. After the initiation by U.S.A to uphold the dignity in the research world, the committee on publication ethics (COPE) U.K was established. The COPE has made guidelines, flowcharts and code of conduct on various aspects of publication such as suspected plagiarism, duplicate plagiarism, change in authorship and conflict of interest. The most advanced measure used by a variety of journals now a days to detect plagiarism is Plagiarism Detection Tool such as turnitin, Safe assign, Cross check, eTblast and ithenticate. A major proportion of Plagiarism Detection Tools works on the principle of finding similarity between the words in the manuscript entered into the PDT with the data base of the PDT. So, the database of the PDT should be tremendous in order to detect similarity with the document entered into it. However, the data updation by PDT is very important and it depends upon the subscription paid by the software company to each journal or database to access it. The costs involved in the updation cannot be afforded by many PDT software companies so they gets outdated. Among the PDTs ithenticate is one of the most popular and commonly used with a broad database covering more than fifty-six billion WebPages. iThenticate gives the results of its plagiarism check in the form of percentage of similarities [9].

### Examples

1. Cross Check™
2. <http://www.ithenticate.com>
3. <https://turnitin.com/static/index>
4. Viper (<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>

### Measures to avoid plagiarism

#### For the author [3,10]

1. **Paraphrasing:** The author should meticulously read the reference articles before writing an article and thereafter he/she can compose the article in own words.
2. **Quoting:** The text or material that is being copied should be put in quotes if it is more than 6 words.
3. **Citing own material:** The author should give his/her own reference from an old published article if the text from the old published article is being used.
4. **References:** references should be listed at the end of the article and should include the sources from which the author has found the information in the given article. References should follow scientific journal format and should contain full bibliographic information.
5. **Permission:** The author should take permission from publishers to use copyrighted images or picture attachments,
6. **Ethical guidelines:** Each individual author should adhere to the ethical standards that has been set forth for the good conduct of scholarly works.
7. The author can run the manuscript in freely available PDTs before submission to a journal to avoid embarrassment of being caught plagiarizing later.
8. **Time:** Scholarly work should be well planned by allotting sufficient time to each phase upto publication.
9. The practice of writing similar type of articles and submitting to different scholarly journals is not a good practice.
10. Consult with a translator or native speaker before sending the final proof of the manuscript to the scientific journals.
11. The author should submit a covering letter with the article submitted to the journals mentioning any unintentional plagiarism that have creped into the article.
12. Avoid the habit of copy-paste.

#### For the editor

1. Each journal should have a clear cut policy on plagiarism and should be communicated to the author in the journal home page.
2. The journal editors should have a plagiarism detection tool which should be updated and covers a large database.
3. The journal editors should use their logical thinking before an article is rejected based on the similarity checks and percentages detected by the PDT.
4. Editors should identify the prolific authors by checking their credentials from available database before processing their manuscripts.
5. Editors should mandate a certificate from the author and from the head of the institution stating the manuscript is original and free of plagiarism.
6. The COPE guidelines can be used as a benchmark to arrive at decisions in various circumstances when plagiarism has been detected.

### Measures initiated against plagiarism

The editors of scholarly journals should not accept plagiarized articles and they should initiate actions to deter authors from such academic dishonesty. The COPE recommends that in case of suspected plagiarism, journals should reprimand the authors, by not accepting the offending author's articles for a span of say 2 - 5 years, and by simultaneously informing their heads of department and dean of the author's medical school [11]. Since plagiarism can range from simple dishonesty to a serious problem, penalty depends on the severity of plagiarism. It ranges from formal disciplinary action (apology letters, retraction of the published article) to criminal charges (suspension and prosecution of authors). Example: "A practicing psychiatrist and radio and television broadcaster in London had to step down as director of the Center for Public Engagement in Mental Sciences in the institute where he was employed and was suspended from practice for 3 months by the General Medical Council" [12].

**Conclusion**

The trustworthiness of the data supplied by journals to each reader is very important to uphold the reputation of the journal which is the responsibility of each author, journal editors and peer reviewers. This can be made possible by following ethical principles and adhering to research integrity. Plagiarism is a menace to the scientific world and the sophisticated softwares such as PDI should be utilized to the maximum to identify the scholars who are indulged in such practices and measures should be initiated against them. The scholars should understand that it is easy to increase the number of publications but it requires hard work and intellectual skill to produce articles which is trustworthy and honest.

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