

Research Misconduct: Cause of Decrease in Validity and Reliability of Researches Results and the Scientific Community

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Over the past few decades, we have witnessed an ever-increasing advancement in new technologies in various fields of medical services, including prevention, diagnosis, treatment and prognosis of diseases, which led to reduce patients suffering, and increase their life expectancy and quality of life.

This remarkable growth of new technologies is due to the rapid growth of science production and technical knowledge in biomedical sciences. Since the mid-twentieth century, the speed of science and technology production in biomedical sciences has increased, with the doubling of medical sciences in 1950 by over 50 years; in 1980, by 7 years; and in 2010 by 3.5 years. In 2020, this time will reach to 0.2 years that is 73 days.

The method and source of producing this kind of science and technical knowledge are definitely those researches conducted at research and development centers, scientific and academic centers by researchers, students and university professors, especially in the field of graduate studies; and the results of these researches are typically published in scientific journals. Along with this growth of science production, the number of researches, researchers and scientific journals has also significantly increased. According to the documentation in 2012, 7.1 million researchers globally (with a significant increase from 5.7 million in 2002 to 7.1 million in 2012) compete with each other to publish their papers in 25,000 scientific and medical journals.

This scientific growth has also been significant in Iran, so that the number of country's indexed articles in the Medline database increased from 180 articles in 1999 to more than 1400 articles in 2005 and in the ISI web of sciences database from 1,000 articles in 1999 to about 5400 articles in 2005.

This process has led to an increase in researchers, research costs, and more and more articles over the last few decades, especially over the last decade. The increase in these three factors i.e. the number of researchers, the cost of research and the number of articles have put the academic community under a lot of pressure to publish their articles. Along with these policies and guidelines of universities in assessing the

performance of students and faculty with a great deal of emphasis based on their research performance, this pressure has also been doubled.

This intense competition for publishing articles in medical journals has been unfortunately accompanied by a significant increase in research and professional misconduct. In a comprehensive review of retract articles from 1977 to 2010 in prestigious journals such as Science, Cell and Nature (and several other authoritative journals) conducted by the Nature Publishing Group, it is shown that retract articles have increased 10 times in this period and 44% of these retract articles have been due to research misconduct, most of which have occurred in the last five years (2006-2010). The study also found that in one of these journals 23% of the submitted papers were rejected due to plagiarism.

Unfortunately, these misbehaviors have been observed among the researchers of our country over the past few years, which not only it has provoked the scientific community reaction, but also it has had a social reflection.

It should be noted that biomedical researches play a vital role in the quantity and quality of life as well as destiny of human and societies through production of science and technical knowledge and consequently affecting the preventive, diagnostic and therapeutic methods. Therefore, it is expected researchers present reliable and valid scientific findings so that the medical society could use these results, with full confidence, to change and improve the preventive, diagnostic and therapeutic methods. Observing the principles of professional ethics and publishing the actual results are the main factors for validity and reliability of a research; therefore, ignoring these factors either consciously or unconsciously could undermine the scientific validity of the research and consequently its reliability and results, and finally it may lead to distrust the scientific community.

Researchers, especially the biomedical ones should always keep in mind that research is a public trust that must be carried out ethically. Research should build trust and carry social responsibility if it aims at producing valuable results. Even if one part of

the research project (from idea development to the end of publication of results) is questionable or conducted unethically, this will bring the validity of the research into question.

In order to maintain the reliability of the research findings and scientific publication and also to develop more confidence in them, not only the researchers should pay attention and adhere to the ethical and professional principles, but the biomedical research foundations and centers should develop guidelines

and policies, as well as standards for observing research ethics and monitoring the researchers' performance ([1](#), [2](#)).

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