EDITORIAL

Quality Research: An appraisal

Dr. Man Mohan Singh, Ph.D., D.Sc., FNASc

Scientific research is indispensable to a nation's health, prosperity and security. Last few decades have seen an astounding growth in the output of research findings and conclusions. According to Ulrich's Periodicals Directory, the number of 'refereed academic/scholarly' publications is growing at an annual rate of 3.26% i.e., doubling almost every 20 years. Many regard this upsurge in number of publications as a healthy sign as they believe that more published output means more discoveries, more knowledge, more awareness and an ever-improving enterprise. Mark Bauerlein & coauthors (2010) in their article 'We Must Stop the Avalanche of Low-Quality Research' published in The Chronicle of Higher Education, that led to extensive discussion as well as criticism, however, believe that while brilliant and progressive research continues apace here and there, the amount of redundant, inconsequential, and outright poor research has swelled in recent decades. According to them, while two decades ago about 45% of the articles published in 4500 top scientific journals were cited within the first five years of publication, only 40.6% of articles published in top science and social-science journals got cited during 2002-2006. As a result, instead of contributing to knowledge, increasing number of low- or un-cited publications only adds to the bulk of words, numbers to be reviewed or read for relevance to one's own work and the amount of material one must read to conduct a reasonable review of a topic. This avalanche of the so called 'Ignored research', that necessitates years of field, laboratory and library investigation, they believe, has profound damaging effect on the enterprise as a whole.

Dr. Man Mohan Singh completed his graduation (B.Sc.) from Panjab University in 1967, post-graduation (M.Sc.) in 1969, Ph.D. in 1973 and D.Sc. in 1997 from Lucknow University. He was elected Fellow of The National Academy of Sciences, India in 1995. He worked at the Institute of Animal Physiology, Cambridge, UK and at Medical School, University of Birmingham, UK as WHO post-doctoral research fellow, and as Scientist at Schering AG, Berlin, Germany under DAAD funding. He served as ICMR Emeritus Medical Scientist, Chief Scientist, Head, Endocrinology Division and Research Coordinator at the CSIR-Central Drug Research Institute, Lucknow. He is an awardee of the NCERT Science Talent Search Scholarship and Medal, Lucknow University's KN Bahl Gold Medal and CSIR Raman Research Fellowship. Currently he is working as Director, R&D at Saraswati Dental College & Hospital, Lucknow, India.

[1]Director, Research & Development, Saraswati Dental College & Hospital, Lucknow-227105, (UP), India.

Address for Correspondence:

Dr. Man Mohan Singh, Saraswati Dental College & Hospital, 233, Tiwari Ganj, Faizabad Road, Chinhat, Lucknow-227105 (UP), India.

Contact: +91 9415634056, E-mail: singhmm46@gmail.com

What then is the 'Quality research' or 'Useful research' and how does it differ from 'Useless research' or 'Ignored research'? According to Bauerlein (2010), research that does not make meaningful contribution to knowledge is, indeed, useless - and worse than useless - as it takes time and labor away from other activity. One would normally expect that results generated from research using tax payer's money, precious time, human/animal tissues/lives, materials and energy are published so that somebody, sometime in future may make sense of it all such that it may ultimately get integrated into the 'larger picture'. Some even argue that negative results, which researchers often ignore or suppress, should also be published as that might help others to avoid repeating the same mistakes. According to an article on 'Unreliable research' published in 'The Economist' (19 Oct 2013), negative results are much more trustworthy, but researchers and journals prefer to accentuate only the positive results. There have been many instances in the past where scientific research once ignored or regarded as useless, was later recognised as significant. History is also full of instances where original researchers were overlooked for due recognition. However, while many today agree that we may not always know the good from the bad for many, many years, others feel that in the current era of easy communication and access to information, such delay in recognising potential of a research are very unlikely to happen. Still others argue that the facts of today may often not be the facts of tomorrow and thus, what is useful, fruitful and widely considered citeable today might not be so useful in 100 years.

How then to assess worthiness of a research contribution? Some believe that even if read, articles that are not cited by anyone would seem to contain little useful information. In other words do we assume that if something is not cited, then it is not useful? Impact factors and citation numbers normally used to judge the quality of research may not be universally true as researchers particularly in the area of social sciences and humanities believe that highest impact factors tend to be associated with applied and interdisciplinary journals that can be cited by a lot of different people, and not core

journals that publish the most substantive stuff. Moreover, work in an innovative or obscure area may initially get very few citations, but that may not make it low-quality work. There are cases where a researcher has greatly benefited by reading a paper that s/he may never have the opportunity to cite. Then there are people who keep citing themselves or get together with their friends and colleagues to cite each others' work at every opportunity ignoring everyone else to get high citation counts. Further, with only a few 'high-impact' journals in every field where many researchers find it harder to publish. Rapid rise in demand for more and more faculty to be research-active and to publish in peer-reviewed journals and conferences has led to creation of many new 'international' journals. Landrum Kelly (2010) believes that most such journals go unread, uncited and unloved. But as a result, institutions are facing huge subscription costs and space pressures and the question that is being asked is 'Should Libraries drop journals that don't register impact'? While some believe that economic factors will ultimately force a change, there may be other ways to see a reduction in the amount of superfluous research. In the views of Bruce Alberts (2013), the then Editor-in-Chief of 'Science', to bolster credibility of scientific enterprise, journals must do more to enforce standards, introduce checklists (as done by 'Nature') to guard against most common research errors, teach technical skills including statistics to budding scientists, who must also be imbued with skepticism towards their own results and those of others, judge researchers on the basis of quality, not quantity, of their work, funding agencies should encourage replications and lower barriers to reporting serious efforts which failed to reproduce a published result, information about such failures ought to be attached to the original publications, and develop value system where simply moving on from one's mistakes without publicly acknowledging them severely damages, rather than protects, a scientific reputation. This, according to Dr. Albert, will not be easy, but if science is to stay on its tracks, and be worthy of the trust so widely invested in it, it may be necessary. In nutshell, therefore, with lack of consensus on specific standards for assessing quality of research, discussion on 'who or how to decide what is useful research and what is useless research' continues and so does the avalanche of research publications and creation of new 'international' journals leading to a state of information overload that, despite easy communication and access to information, a researcher today has to strive to remain up-to-date with the developments relevant to his/her microspeciality. Personally, I do not believe that the entire 'Ignored research' is 'Useless research'. Many a researchers or nondescript labs may not have the means to publish their research in journals with high impact factor and international repute to get notices and cited. Need thus is to identify quality and importance of one's research and publish in such journals to timely get due recognition for the contribution.