ROLE OF INSTITUTIONS IN FOSTERING RESEARCH INTEGRITY AND COMBATING RESEARCH MISCONDUCT

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The year 2018 ended with a pleasant surprise for emerging economies in the form of the Nature Groups' research productivity statistics, with Egypt and Pakistan leading the way, closely followed by China, India, Brazil, and Mexico.1 While, this exponential growth was in relative terms to the previous year's 'performance and could be explained by a variety of factors, the progress was nonetheless impressive and a step in the right direction. Knowledge synthesis has long been established as a key driver for a Nation's growth, and in the realization of this fact, most countries have started pouring resources into research, effectively striving towards a knowledge-based economy.2

The emphasis on research productivity, however, has brought along its own set of problems. The most important issue in research is adherence to the core values of research, which include "objectivity, honesty, openness, fairness, accountability, and stewardship".3 A breach of these core values during any research process, from conception to conducting and reporting of research is known as scientific misconduct. The US Office of Science and Technology Policy (OSTP) defines "research misconduct" as "fabrication, falsification, or plagiarism in proposing, performing, or reviewing research, or in reporting research results, and does not include honest error or differences of opinion".4 This definition, however, covers the so-called "Big Three" of research misconduct only, i.e. Fabrication, Falsification and Plagiarism. There are however, some "other serious deviations" from the core values, proposed by Ryan Commission as "misappropriation, interference, and misrepresentation".5 Gift authorship, coercive authorship, ghost authorship, statistical misuse/abuse in research, confidential data disclosure, non-declaration of conflict of interests, and poor or no editorial/peer review etc. are some other important threats to the integrity of scientific research.

Research misconduct is a global phenomenon and the gravity of misconduct in low- and middle-income countries (LMIC) is the same as in high-income countries.6 Given the surge of publication output in LMIC, as evident by the Nature report, we may assume that the instances of research misconduct could further rise in number. A cursory look at "Retraction Watch", a resource documenting retractions due to scientific misconduct, shows a preponderance of authors from LMIC compared to developed nations.7 In Pakistan, a number of research misconducts have been reported.8,9 The "publish or perish" culture in academic institutions, use of indicators like number of publications and impact factor as criteria for appointment and promotion, lack of funding and much needed research skills are some of the precipitating factors for the escalating rate of research misconduct.

Efforts have been taken by various institutions to deal with research misconduct. Higher Education Commission (HEC) of Pakistan has blacklisted few researchers/faculty members who were involved in plagiarism.10 However; research integrity is not limited to handling research frauds, fabrication, falsification and plagiarism and punishing the culprits.11 Research integrity needs the development and implementation of policies and procedures for responsible conduct of research in accordance with professional standards. Institutions must create systems, which can ensure adherence to the ethical norms of research, use of robust study designs, strong data management, honest and accurate dissemination of study results and mechanisms to deal with allegations of research misconduct through a transparent process.3

The HEC, Pakistan Medial & Dental Council (PMDC) & Pakistan Health Research Council (PHRC) are responsible for regulating health research in Pakistan. HEC is the main regulatory and funding body for universities and in general is responsible for all matters of teaching and research at the university level. The PMDC and PHRC are mostly concerned with medical/health sciences teaching research, respectively. Although science thrives in a milieu of autonomy, it has become increasingly important for regulatory institutions to ingrain measures that thwart research misconduct and maintain integrity of research.12 All these organizations should develop a consensus on mechanisms to regulate health research and provide frameworks and guidelines for good scientific and research practice. Once such guidelines are there, universities and research organizations can adapt them to their own contexts.

In Pakistan, health research is primarily conducted by medical universities and their constituent/affiliated institutes. Every university has an "Office of Research, Innovation and Commercialization" (ORIC), serving as a centre to facilitate all the research activities. However, the model structure of ORIC proposed by HEC,13 is lacking the essential "Office of Research Integrity" (ORI). Every research-conducting institute should have an ORI with a dedicated research

integrity officer. The National regulatory authorities should facilitate the capacity building of the ORI.

The ORI will comply with the rules & regulations set by regulatory authorities to prevent any threats to the research integrity. ORI should monitor the execution of research projects, peer review & dissemination of the study results, protect the rights of research participants and maintain the integrity of data and research records. ORI should serve as watchdog for alleged research misconduct and report the confirmed cases of misconduct to the concerned authorities for appropriate action. ORI has the responsibility to protect and ensure appropriate use of research funds granted by the funders. ORI should improve the culture of responsible research by developing capacity of research groups and individual researchers, thwarting "Sloppy Science" and research misconduct. A collective effort of research institutions and national regulatory bodies can build the reputation of institutions and country by improving the scientific rigor and credibility of research in Pakistan.
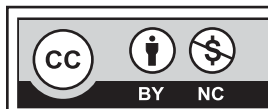
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