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Editorial

Plagiarism: a scourge afflicting the Indian science

These are questions that worry us every time we receive a manuscript for publication in the *Indian Journal of Medical Research.* Is the paper original? Does it contain new information/data not reported elsewhere by the author(s) or someone else? Such doubts have of late been increasingly bothering journal editors who have since added a new tier in due diligence in editorial offices to protect the integrity of scientific record. Editors, a sceptical lot, religiously follow the dictum - trust *but* verify. Experiences at our Journal and elsewhere[1-7] have only reinforced our cynicism to routinely check all manuscripts through web-based databases to confirm the 'originality' of their content. Unsurprisingly, substantial parts are often found appropriated either in parts or *in toto* from other published sources – outright intellectual theft. And conveniently not cited!

There is no universally accepted definition scientific (research) misconduct despite serious efforts[8]. Perhaps the most comprehensive and legally-tenable definition on research misconduct comes from the United States Public Heath Service (USPHS): "Fabrication, falsification, or plagiarism, in proposing, performing, or reviewing research, or in reporting research results. It includes: (a) fabrication is making up data or results and recording or reporting them; (b) Falsification is manipulating research materials, equipment, or processes, or changing or omitting data or results such that the research is not accurately represented in the research record; (c) Plagiarism is the appropriation of another person's ideas, processes, results, or words without giving appropriate credit"[9]. The Committee of Publication Ethics (COPE), a UK-based group of editors and publishers, defines misconduct as "Behaviour by a researcher, intentional or not, that falls short of good ethical and scientific standard"[10]. The intent of the perpetrator is clear - the untruthful portrayal of the ideas or methods as his or her own. Therefore, research misconduct generally excludes unintentional error or honest differences in the design, execution, interpretation, or judgment in research and their reporting.

This paper focuses only on plagiarism - the appropriation of ideas, data, or methods, use of text or other items (figures, images, tables) without permission or acknowledgment/and or explicit citation of the owner of the intellectual property (publisher and/or author). Other very common types of plagiarism include[11]: (*i*) use of data from controls from an earlier publication; (*ii*) reproduction of Tables or Figures from an earlier article in subsequent publications; (*iii*) publish similar articles with subgroups of data previously analyzed, discussed and published as a larger group; (*iv*) publish same/similar data repeatedly, say, one with a clinical focus and the other from a basic science perspective; (*v*) publish same/similar article in a local and also in an international journal with same/different authorship *etc.* Surprisingly, even many senior scientists (not just in India) see nothing wrong in unacknowledged substantial repeated use of same data and/or other published content.

How serious is the malaise? Reliable global data are unavailable. The Office of Research Integrity (ORI), US DHHS, that systematically tracks and investigates allegations of research misconduct in NIH funded research, pegs the prevalence to be about 25 per cent[12]. In India, such unethical practices are considered to be rampant and all pervasive[13]. This could well be true as several reported allegations are from well known institutes and systematic tracking by journals has thrown up many instances[5,6]. What is more, many cases have come to light by sheer chance. Also, much of plagiarized stuff appears in Indian journals which are not indexed, hardly ever read or cited. International

uproar due to the embroilment of Indians - V.J. Gupta, Ram B. Singh, R.K. Chandra *et al*[13-14] over last three decades and the absence of substantive remedial measures is not exactly reassuring.

It is well known that plagiarism begins very early in science. The mandatory PowerPoint presentations by young researchers appropriating others' content without acknowledging the source are almost always 'accepted' by the peers. The emboldened perpetrator graduates to lifting chunks of material and recycle to create term papers, reports or even a Ph.D. thesis. There are reports of plagiarized dissertations awarded Ph.Ds. in some Indian Universities, thanks to a cozy nexus between the Guide, University and examiners. It is much worse in medical colleges with most so called theses/dissertations submitted for MD/MS/DM/MCh degrees are but a rehash of published material culled out from several sources. With examiners generally uninterested in going beyond the title page, the conduct, recording and reporting of research in most medical colleges (including some well known ones) is abysmal.

Some recent incidents of plagiarism in India and (near lack of) action thereof underscores the deep rot that has set in. In the most recent incident, a paper of a senior academic in the All India Institute of Medical Sciences (AIIMS), New Delhi was withdrawn after the editors found several overlaps including figures (plagiarism) from another review published in 2001 by a UK-based professor. Seven professors of AIIMS including a former Director were accused of publishing the same article in two different journals[3]. Almost 70 papers published in prestigious journals by a professor in the S. V. University, Tirupati were allegedly plagiarized[2]. In another case a Vice-Chancellor with proven charges of plagiarism was allowed to resign![13]. And this after a sustained a national furor. A former Director-General of the CSIR and President of the Indian National Science Academy figures in two allegations of plagiarism[13,15]. In a shocking revelation, 10 of 18 students who copied their way to admission to a US business school this year were Indians[4]. The website of Society of Scientific Values, New Delhi[13] lists many such cases.

Generally, a plagiarized paper makes it to print on the advice of reviewers. Reviewers while scrutinizing manuscripts for 'originality' of content being reported often alert the editors of possible appropriation of previously published content and guides to the source. It would therefore be ideal if a web-search is done for the research being reported, perhaps through a younger colleague (a post-doc), as senior scientists who review papers are often busy. In fact, such young scientists are often also the whistle blowers. Besides reviewers, authors have a critical role to play to prevent the incidence. The senior corresponding (senior) author who gives the go-ahead to the draft submitted by the first (usually a young) researcher should be more vigilant. In almost all the research misconduct cases globally, the senior author pleads ignorance, occasionally generously admitting to sloppy supervision. Also, most co-authors are usually happy to see their names in print, and, in our experience, get to know only after the article is printed. Good research reporting mandates that all co-authors see and approve of the final version of the paper. What is more, journals like the IJMR expect all authors to sign and also provide the 'contributorship' statement. But it is the journals editors as gate-keepers of science who should introduce and rigorously enforce the mandatory signed declaration of (*i*) the originality of paper being submitted; (*ii*) exclusively to the journal; (*iii*) and contributorship statement declaring upfront their contribution to the work being reported. Policies of sharing of experimental materials, data and other relevant information for replicating research, now rarely used in India should be encouraged and strengthened. Editors primarily announce the occurrence of distorted scientific record through 'expression of concern', 'errata' and 'retraction' *etc*[8]. In cases of proven misconduct, a correction or retraction must be published prominently in the journal with complete bibliographic details with listing and labeling in the contents page. But editors should ensure complete confidentiality while the allegations are being investigated. Once proven, responsibility should be fixed. The formal announcement should clearly mention only the guilty and co-authors innocent of the misconduct should be excluded.

Generally, editors are the first to know of allegations of plagiarism. But globally, despite best intent can do little as they lack resources, expertise and, more importantly, authority to conduct such investigations. I think enforcement is possible only for public-funded research. Funding agencies like the UGC, DST, CSIR, ICMR, DBT *etc.*, should vigorously pursue allegations of misconduct. Surely, policing research misconduct is not just tough but time consuming necessitating scientific, administrative, legal expertise and, finally, will to do. To my mind, while delayed action due to lack of expertise is perhaps understandable, the continued inaction by public-funded bodies could well be due to

Suggested National Plan of Action

Government/ funding agencies

Formulate national policies and laws on the ethical conduct, recording and reporting of public-funded science and technology in both in higher education and R&D sectors, with a time-bound action plan.

Encourage systems of transparency and accountability in the doing and mandatory reporting of public-funded science and technology. All information/data generated with public funding should have unfettered public access.

Set up a formal body with scientists, administrators and legal experts for systematically investigating and punishing the guilty. A model that could be considered is the Office of Research Integrity (ORI), USPHS in the R&D (in the DST) and higher education (in the UGC or its new proposed body) sectors. Small units with oversight function could be set up at all major institutes/universities.

Create an environment that promotes reporting of cases of suspected misconduct with appropriate systems for maintaining confidentiality during investigation. Create and enforce legal support systems to protect whistle blowers, often young researchers.

Ensure that once the verdict is out, it is disseminated widely through the web sites of public-funded agencies and communicated to all interested parties including the authors' and their institutions, Once the charge is established, names and institutional details of the guilty should be put in public domain.

Promote respect for others' intellectual property. Plagiarism is copyright violation, a cognizable offence.

Encourage, support and collaborate with voluntary bodies as the Society of Scientific Values, New Delhi to promote systems of ethical conduct, recording and reporting of science and technology.

Encourage and support training programmes to sensitize young and middle level scientists and technologists of the ethical practices in science.

Formulate national authorship policies, as misuse/abuse of authorship also contributes to plagiarism.
Support research on research (scientific) misconduct.

Journal editors

Develop a sound and consistent policies and practices for promoting ethical publication.

Set up systems of routine checking of manuscripts submitted for publication for plagiarism and other form of research misconduct.

Introduce mandatory declarations for co-authors and corresponding author, especially responsibility of the content being reported through models as 'contributorship', widely applied in medical sciences.

Once allegation is found to have some substance, refer to appropriate/institution/funding body with all necessary documentation. And pursue vigorously thereafter.

Encourage reviewers and readers to take an active role in tracking unethical publications. Ensure confidentiality of information/data provided.

Set up forums of editors to share information on the allegations as also outcome once guilt is established. Protect the innocent from adverse publicity.

Formulate national guidelines for editors to promote good publication practices.

National academies, Voluntary bodies, readers and public

Help Government and the higher education sector in formulating suitable guidelines for the ethical conduct, recording and reporting of science.

Encourage tracking of unethical science, communicate, vigorously monitor and pursue the allegations, especially action after the final outcome.

Work with the Government towards ensuring transparency and accountability of public-funded science through open access to data/information.

Promote code of conduct and good publication practices through sensitization programmes for young researchers.

the lack of courage to publicly acknowledge and will to act. In fact, the little action that has been taken, albeit reluctantly, is due to the persistent efforts of voluntary bodies like the Society for Scientific Values[13] that not just goaded the establishment but willingly lent expertise to establish the allegations.

Fortunately, there is experience and expertise that could be used with several global models to choose from. The US and Denmark are considered the best[13]. The ORI, USA functioning since 1992 with scientists and lawyers is most experienced in handling charges of all forms of research misconduct. In the UK, the COPE has been very active and effective in laying down guidelines for investigating allegations of misconduct and action to be taken by editors[8]. The Chinese Ministry of Science and Technology has recently issued ethical guidelines for researchers with clear definitions on falsification, fabrication, or plagiarism, abuse of scientific research resources with a central ethics committee to investigate and punish the guilty[16]. Sadly, India still does not have any formal government mechanisms either in higher education or R&D sectors despite the most celebrated case known in 1985. Even the learned academies - the three national science or the medical or engineering academies have been very alert to the need to maintain the integrity of science. Perhaps, only the Indian Academy of Sciences, Bangalore has issued ethical guidelines and procedures for its Fellows[17]. Significantly, I am not aware of any Academy formally investigating allegations against their Fellows. Among the scientific agencies, the ICMR has brought out guidelines on authorship for both intra and extramural research, though not rigorously enforced. It is therefore left to the SSV to doggedly wage a lonely battle for cleaning up the Indian science of its known ills since 1986. The SSV can be justifiably proud of its role in the investigation of virtually all the recent cases of alleged misconduct, and, what little action taken thereafter[13].

If India hopes to emerge as a global player in S&T, it is important to achieve international credibility of the integrity of science being reported, which, currently is very much below par. We are just way behind despite over two decades of international embarrassment of consistent inaction and, much worse, often allegations of shielding the guilty. A National Plan of Action proposed (Box), based on inputs from various sources to combat plagiarism, needs urgent and serious consideration. I firmly believe that it will never be possible to eliminate unethical practices in the conduct, recording and reporting of science anywhere in the world; we could at best minimize their incidence. But a beginning is long overdue.

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