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## Publication misconduct among medical professionals in India

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### Abstract

*This study was planned as an exploratory study to determine the extent of occurrence of misconduct in publication (gift-authorship, ghost-authorship, falsification of data, fabrication of data, plagiarism, and duplication) amongst biomedical researchers. It was a questionnaire-based study, conducted at 9 institutions; 6 medical colleges (4 government-run and 2 private), 1 non-teaching government hospital, and 2 corporate hospitals, located in northern, central and southern India. The study was conducted between August 2012 and March 2013. 155 senior residents (<3 years after post-graduation) and young faculty members (<10 years after post-graduation) with at least five previous publications were administered a structured questionnaire, in which no identifying information was collected. In addition to personal characteristics, the information collected included their knowledge of publication ethics, their opinions about the prevalence of these practices among their colleagues, and details of any first-hand information on publication misconduct. 155 responses were included for analysis. 141 (91%) respondents agreed that they had some knowledge of publication ethics; but only 29% believed it was adequate. The most commonly observed misconduct was offering gift authorship, reported by 101 (65%); followed by alteration of data reported by 88 (56%). Plagiarism was observed by 83 respondents (53%); while 52 (33.5%) respondents had observed a colleague's name being omitted from a paper to which she/he had significantly contributed. A majority of respondents in the present study reported witnessing publication misconduct, thereby revealing the common occurrence of this problem among Indian biomedical researchers.*

### Introduction

Publishing research studies has become an important aspect of career advancement and promotion for the medical fraternity. With this desire to further professional aspirations, misconduct has crept into medical research in different forms. Research misconduct has been defined as: "fabrication, falsification, or

plagiarism in proposing, performing, or reviewing research, or in reporting research results; fabrication is making up results and reporting them; falsification is manipulating research results, equipment, or changing or withholding data or results such that the research is not accurately represented in the research record; plagiarism is the presentation of another person's ideas, processes, results, or words without giving appropriate credit" (1). Research misconduct does not include honest error or differences of opinion (1), and implies wilful acts. Apart from this, misconduct may also be manifested in not conforming to the authors' guidelines of a particular journal and hence offering "gift authorship" (inclusion among the authors of an individual who does not fulfil the requirements for authorship), "ghost authorship" (non-inclusion of individuals as authors who played an effective part in the work and were qualified for authorship), "duplication" (publication of the same paper in different journals with little or no change at all in its content) (2). It may also involve "salami" publishing, where authors slice up their research, carving multiple papers from a single study with the sole aim of having multiple publications credited to them

There is paucity of data from India on the prevalence of misconduct in publication among researchers. This study was planned to assess the prevalence of misconduct as observed by young medical professionals.

### Methods

The study was conducted from August 2012 to March 2013. Initially, detailed discussions on publication misconduct were held with a few senior faculty members of medical colleges, having experience in the field of biomedical publishing. Based on these discussions, a structured questionnaire was prepared to elicit responses on publication misconduct from among researchers. It was pre-tested on 10 medical researchers and modified where necessary. The final version was used for

the present study. The questionnaire was to be filled by the respondents on their own and they were supposed to mention only their age, sex, department, work place and designation. The questions were related to the existence and frequency of gift authorship, ghost authorship, falsification or fabrication of data, plagiarism and "salami slicing" among their colleagues. The inclusion criteria used were: having completed post-graduation within the last ten years, and having at least five publications in peer-reviewed journals. There were no exclusion criteria.

Nine hospitals across India were selected as part of a cluster sampling strategy by administering the questionnaire to medical researchers. The institutions were selected on the basis of availability of a local researcher to coordinate the evaluation, and included four in Delhi, three in southern India and two in central India. The local coordinators at each site were personally known to at least one of the authors, and were informed telephonically about the purpose, methodology and timeline of the study. The questionnaires for each centre were mailed to the coordinators, who subsequently approached acquaintances among their colleagues for participation in the study. No pre-decided scheme was used for selecting participants, except for a direction to include personnel from different medical specialties. Consenting participants who fulfilled the inclusion criteria were provided the questionnaire to be filled, with a request to report only those instances of which they had personal knowledge. Coordinators at each centre were requested to maintain anonymity by collecting the folded questionnaire in a box/envelope, but only four coordinators did this.

The completed questionnaires were mailed back to the investigators in sealed envelopes. Once all centres had mailed the filled questionnaires, all envelopes were opened and all filled questionnaires were mixed without counting them. Subsequently, these were sequentially numbered and physically checked for completeness. Questionnaires having any missing information in the first part (respondent characteristics) and/or more than two unanswered questions in the second part were excluded.

*Sample size and statistical analysis.* To determine an expected prevalence of publication misconduct of 50% (35.7%-72%) (6) with 95% confidence and a confidence interval of 7.5, a randomly selected sample of 170 is required. As we had a coordinating researcher available at each centre, we expected a response rate of more than 85%. Thus, a total 200 questionnaires (20 to each centre) were sent. Data from the questionnaires was entered in Excel sheets and analysed. The data has been presented as proportions and percentages.

## Results

The local coordinator at one centre returned all the questionnaires unfilled as no respondent was willing to answer the questions. Thus, a total of 192 filled questionnaires were received from the remaining nine centers, as many coordinators used additional photocopied forms. Data regarding the number of faculty members approached for participation, and

the number of completed forms at each site was not collected. Of the total, 27 responses were excluded from analysis as the respondents did not meet the inclusion criteria. As had been decided a priori, questionnaires that were incomplete or filled illegibly were excluded (n=10). Hence, a total of 155 responses were included for analysis. Baseline characteristics of these 155 respondents (81, 52.2% males) are summarised in Table 1 and key findings are summarised in Table 2.

One hundred and forty one respondents (91%) had some knowledge of publication ethics, but only 41 (29.1%) believed their knowledge was adequate. The most commonly reported misconduct found in our study was offering gift authorship, which had been observed by 101 (65.1%) respondents. In 86 (85.1%) instances, the person offered the gift authorship was a senior. Altering and fabrication of data came a close second, with 88 (56.7%) respondents having knowledge of a senior, junior or peer who had altered and fabricated data in order to get a paper published

Plagiarism (copying someone else's idea and presenting it as one's own) was observed by 83 (53.5%) of the respondents; with seniors more often reported to be involved than peers or juniors. Only 52 (33.5%) respondents had observed a colleague's name being omitted from a paper to which he/she had significantly contributed. Fifty one (32.9%) respondents were aware of their colleagues having sliced up their studies and carved out multiple papers from a single study, to increase the number of publications. Fabrication of results in research projects funded by drug companies was rarely seen in our study. One hundred and thirty five respondents (87%) have not noticed their peers meddling with the results of research projects that are funded by drug companies. Only 32 (20.6%) respondents had come across a senior or junior or a colleague publishing one of their already published studies with minimal modifications elsewhere.

## Discussion

This study was undertaken to address the issue of publication misconduct amongst medical professionals. Using a questionnaire with non-identifying information, we found publication misconduct to be widely prevalent with more than half of the respondents having observed one or the other form of this malpractice.

The major strength of the study was the high response rate, ensured by having a local coordinator at each site. The provision of anonymous response probably ensured a more honest response, rather than when there was a possibility of the respondent's identity being disclosed. A major limitation of the study was that our sample size was selected for a random sample, whereas we used a cluster sampling method, thus the estimates provided may not be representative of the population. We could not get the required number of responses and thus had a small sample size. We included only those centres where we could co-opt a local coordinator, thus we did not include institutions from all regions of the country. Our study was limited to young medical professionals

without equal representations from all disciplines, limiting any generalisations that can be extrapolated to the entire fraternity or to other disciplines.

The most commonly reported misconduct in our study was that of offering gift authorship (55.4%), which is higher than that reported by Geggie (4) who has reported a prevalence of any observed misconduct as 37%. This may be due to two prime reasons. Firstly, most of the respondents in our study (74%) were from medical colleges, where the pressure to publish to further professional aspirations and tenure is definitely more than in non-academic institutes. The second reason may be attributed to the design of the questionnaire where the respondents were only asked about instances of misconduct observed by them and not about what they themselves had been a part of. Anyone who has ever falsified data is less likely to admit to it despite all guarantees of anonymity (5). In a recent meta-analysis to determine the frequency of scientists fabricating data, a pooled average of 1.97% scientists admitted to the falsification of data and 33.7% admitted to other questionable practices themselves. However, when asked about the behaviour of colleagues, admission rates were 14.7% for falsification and 72% for other research malpractices (ie 2 to 7 times higher) (6). Previous studies have attributed various reasons to inappropriate authorship. These include feelings of obligation and giving credit for past or future associations (7). This is evident in the present study also, as >80% of those offered gift authorship were seniors. However, the exact reasons for this could not be ascertained in our study.

Almost 71% researchers admitted to having inadequate knowledge of publication ethics. This, in our view, is the most important finding from this study. This lack of knowledge may well be the foundation for future publication misconduct. Thus, it is important to disseminate the knowledge and principles of publication ethics, especially amongst young researchers. Various organisations like the Committee on Publication Ethics (COPE) and World Association of Medical Editors are already making efforts towards promotion of ethical and scientific principles in publication (8). Inclusion of this aspect in the medical curriculum, both at undergraduate and postgraduate levels, may be one more avenue to address this deficit.

In a study that evaluated 788 papers that were retracted from English language literature published from 2000-2010, the retracted papers were noted to have been cited 5000 times, and 9,189 patients were treated in 180 primary retracted studies while 70,501 patients were treated in secondary studies which cited a retracted paper (9). Hence, publication misconduct is not only an academic/research issue; but also encompasses the domain of patient-safety. Besides, it incurs losses in resources, both financial and human. Further, data falsification may dilute

the already existent research. It could waste the resources of future scientists who may try to build upon the data provided in a falsified paper (10).

The major strength of this study is the collection of responses from a large pan-Indian sample of medical researchers at an almost similar level in their academic careers. The use of cluster-sampling instead of using a random sample of researchers, and excluding those with less than five publications, or with more than 10 years since post-graduation, were the two major limitations of the study.

Publication misconduct is not uncommon in the medical fraternity. However, considering the sensitive nature of the work, estimation of true prevalence may be difficult to ascertain. It is important to create awareness amongst the medical fraternity towards what constitutes misconduct so as to reduce its occurrence. Further studies with an appropriate sample size and pan-Indian representation need to be designed to give a better estimate of this problem in our country. Such studies should also have appropriate representation from non-teaching and corporate institutions, so as to be able to determine whether attitudes differ in those from academic institutes compared to non-academic institutes. Urgent and concrete action is needed on two fronts: improving the knowledge of medical professionals and strengthening mechanisms to identify and weed-out publication misconduct.

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**Table 1**  
**Baseline characteristics of respondents (N=155)**

<b>Characteristic</b>	<b>Number (%)</b>
<b>Age (yrs)</b>	
<30	45 (29%)
30-35	46 (29.6%)
35-40	64 (41.2%)
<b>Time since post-graduation (yrs)</b>	
< 5	64(41.2%)
5-10	91(58.7%)
<b>Place of work</b>	
Government medical college	115((74.19%)
Government hospital	10(6.4%)
Corporate hospital	30(19.3%)
<b>Current post</b>	
Researcher	15 (9.6%)
Senior Resident	46 (29.6%)
Faculty	94 (60%)
<b>Department</b>	
Paediatrics	44(28.3%)
Obstetrics and gynaecology	19(12.2%)
Pathology	17(10.9%)
Medicine	10(6.4%)
Microbiology	9(5.8%)
Anaesthesia	9(5.8%)
Others	47(30.3%)

**Table 2**  
**Response to questionnaire by biomedical researchers**

<b>Question</b>	<b>Positive response, n (%)</b>	<b>*Senior, n (%)</b>	<b>#Junior, n (%)</b>	<b>^Colleague n (%)</b>
Gift authorship	101(65%)	86 (85%)	9 (8.9%)	6 (5.9%)
Omission of author	52(33.5%)	15 (28.8%)	18 (34.6%)	19 (36.5%)
Alteration/ fabrication of data	88(56.7%)	56 (63.6%)	14 (15.9%)	18 (20.4%)
Duplicate submission	32(20.6%)	18 (56.2%)	2 (6.2%)	12 (37.5%)
Plagiarism	83(53.5%)	45 (54.2%)	15(18%)	23 (27.7%)
Salami publication	51(32.9%)	36 (70.5%)	6 (11.7%)	10 (19.6%)

**Person committing misconduct was \*senior to/\*junior to/^colleague of the study participant.**