



Unethical Practices in Science, and Authorship

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Unethical practices in science

- ❖ **What are unethical practices in publication**
- ❖ **How these occur**
- ❖ **Role of authorship**
- ❖ **Some case studies**



What are unethical practices in science?

Fabrication, falsification, plagiarism or other practices that seriously *deviate* from those that are commonly accepted within the scientific community for *proposing, conducting, or reporting* research.

It does *not* include honest error or honest differences in interpretations or judgments of data



Unethical Practices in Science

- ❖ Fabrication is *making up data or results and recording or reporting* them.
- ❖ 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
- ❖ Plagiarism is the *appropriation* of another person's *ideas, processes, results, or words* without giving appropriate credit
- ❖ *Research misconduct does not include honest error or differences of opinion*

US Federal Policy on Research Misconduct (OSTP)
Federal Register, December 2000



Other types of unethical practices

- ❖ **Gift authorship**
- ❖ **Duplicate publication**
- ❖ **Salami publication**
- ❖ **Conflict of interest**



Why do these occur?

- ❖ **Pressure to publish**
- ❖ **Career prospects**
- ❖ **More team work and collaboration**
- ❖ **Ignorance of ethics**

"It's publish or perish, and he hasn't published."



F. Schiller



Authorship profile of *Indian Journal of Medical Research*, 1944-2000

Year	No. of authors per paper					Authors per paper
	1	2	3	4	5+	
1944	12 (32)	19 (50)	7 (18)	-	-	1.87
1954	17 (23)	40 (53)	17 (22)	2 (3)	-	2.05
1964	38 (4)	56 (53)	44 (28)	14 (9)	4 (3)	2.29
1974	27 (10)	66 (24)	101 (37)	45 (16)	33 (13)	3.0
1984	10 (4)	52 (19)	82 (30)	64 (24)	63 (23)	3.65
1994	3 (2)	27 (22)	24 (20)	24 (20)	43 (36)	3.98
2000	0 (0)	17 (24)	11 (15)	7 (10)	36 (51)	4.73



Publication rates and co-authors of some scientists accused of fraud

<i>Name</i>	<i>Period (yr)</i>	<i>Total papers</i>	<i>Papers/year</i>	<i>No. of coauthors</i>
Robert Good	5	341	68.00	>40
John Darsee	6	171	28.56	47
Vijay Soman	6	201	31.80	>20
Robert Slutsky	6	127	21.00	93



Criteria/guidelines for authorship

A scientific paper is a creative achievement and a record of original productivity

- **Unequivocal evidence of meaningful participation**
- **Co-authorship cannot be a kind of payment for technical assistance or data collection**
- **This holds true for adding the Chief (HOD)'s name to papers regardless of intellectual contributions to the design, execution of study or interpretation of results**



Authorship

- Authorship is closely linked to unethical practices in science
- Co-authors should look at the manuscript critically before it is sent for publication
- Authorship is to be decided *before* the paper is written, much better when the research work is planned



Authorship

- **Who should be listed as an author, and what determines the order in which the authors should be listed?**
- **Authors should be those who have significantly participated in the study, helped writing parts of the paper, or on the revision of the intellectual content of the paper**
- **All the authors should agree on who will be the Corresponding author who would be responsible for settling disputes, if any , on authorship**



Authorship

- **First author should normally be the one most closely associated with work irrespective of the position or academic credentials**
- **The position of the succeeding authors should be determined by the magnitude of their contribution**



Responsibility for defining authorship

- Agreement to be reached early on authorship ideally when the study is initiated and who will be the corresponding author
- Ideally (and generally), this individual is one who will have had the most responsibility for step 1 of the work (*viz.*, conception, design, analysis and interpretation)
- If this person is not available, another author who is familiar with the conduct of the work should be assigned this responsibility



Sequence of authors

- **Sequence is determined by the relative contributions of authors to the intellectually most critical aspects of the study.**
- **Greatest weight should be given to contributions in step 1 (*i.e.*, conception : design of work, analysis, interpretation).**
- **First author should have made major contribution in step 1 and 2 (*i.e.*, drafting/revising critically important content of the article).**
- **The sequence of other authors should represent progressively lesser contributions.**



Contributions that merit authorship

- Literature search and selecting relevant material, literature review, design of the review;
- Data extraction, analysis of data, interpretation of data and statistical analysis;
- Setting up databases and software programs and similar intellectual contributions directly relevant to the specific piece of research; and
- Writing the first draft in whole or part, or contributing, revising subsequent drafts or in the final draft including approval of the final draft;

Contribution in terms of any one or more of the above should be substantial.



Contributions that fall short of authorship

Contributions that do *not* justify authorship but could be acknowledged :

- Data collection
- Advice
- Critical review of study proposed
- Participation in clinical trial
- Permitting access to/use of sophisticated equipment, and other facilities.



Contributions that fall short of authorship

- **Technical help**
- **Financial and material support (from agencies/others sources)**
- **Financial relationships that may constitute a conflict of interest**



Corporate (collective) authorship

- **When a study has been carried out collectively by a group and no single individual (or team of persons) can be identified as having a substantially greater responsibility for its content, than the others, it is advisable for the group to represent themselves by corporate (collective) title, which should reflect the field of study.**
- **Such articles should carry a foot note/Acknowledgement giving the names of the individuals and of their institutions.**



Justification for authorship four cardinal principles

- **An author should have generated at least a part of the intellectual content of paper; initially conceived of the study it reports, if it is a research paper or case report or developed the plan for the paper, if it is a review or an editorial.**
- **An author should have collected reported data (including clinical observations) and interpreted them for the paper's message.**
- **An author should have taken part in writing the paper or revising its intellectual content.**
- **An author should be able to defend publicly in the scientific community that intellectual content of the paper for which he or she can take responsibility.**

Edward Huth, 1982



Unethical Practices in Science - Authorship

ICJME Guidelines on Authorship (1997)

Authorship credit should be based on substantial contributions to

- 1) conception and design, or analysis and interpretation of data; and to
 - 2) the drafting of the article or revising it critically for important intellectual content; and on
 - 3) final approval of the version to be published.
- ❖ Conditions 1, 2 and 3 *must* be met



Harvard Medical School Guidelines for Investigators in Scientific Research for authorship (2000)

- **Criteria for authorship ... determined by each department. Only criteria... substantial direct, intellectual or practical contribution. Honorary guest authorship unacceptable. Others can be acknowledged**
- **In team work, individual's contribution to be limited to specific aspects of work**
- **The first author should assure the head .. that all primary data on which the paper is based is reviewed. One author should take primary responsibility of the content**



Harvard Medical School Guidelines for Investigators in Scientific Research for authorship (2000)

- ❖ The primary author should ensure that all authors meet the *basic standards* of authorship. They should prepare a concise, written description of their contribution which should remain with the dept/unit
- ❖ Appended to the final draft of the manuscript should be a *signed statement from each co-author* indicating that he/she has reviewed and approved the manuscript to the extent possible, given the expertise
- ❖ Order of authorship may be decided by *consensus* but each author specifying their contribution. This issue should be discussed *early in the course of work*



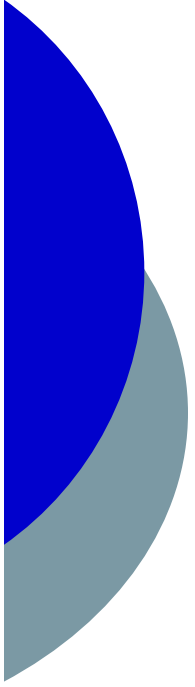
Authorship

- *Policy on authorship for ICMR supported research (ICMR, New Delhi) 2001*



Contributorship

- **Authorship vs Contributorship**
- **Now mandatory for publishing papers in many medical journals like *JAMA, Lancet, BMJ etc.***



Thank you