Publication and authorship challenges experienced by medical students involved in biomedical research

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Physician-scientists are defined as individuals who combine clinical practice with biomedical research. By virtue of their integrated experiences in clinical practice and biomedical research, physician-scientists are well positioned to advance the field of medicine. Most future physician-scientists develop an interest in pursuing a career in academic medicine at some point during their medical training. This interest is often kindled and further reinforced by positive research experiences working with established physician-scientists.

Unfortunately, recent reports indicate that the size of the physician-scientist workforce is declining. Engaging medical students in research is regarded a key factor in reversing this trend and revitalising academic medicine. Although early involvement in research is associated with improved short-term and long-term academic productivity and increased interest in a research-focused medical career, disincentives to a career in academia may actually arise as an unintended consequence of these educational efforts.

Negative early research experience has been found to be a major factor in discouraging medical students from entering academic careers. Medical students report lack of acknowledgement of their contributions to research projects as a key barrier to further participation in research. When involved in research, students are often tasked with data collection and subsequently excluded from manuscript preparation and publication. This is complicated by students’ naivety regarding what constitutes substantial participation in the research process, the level of involvement that warrants acknowledgement or authorship. More worryingly, even when junior scholars have contributed significantly to the research effort, their expectations for authorship membership and order may not be fulfilled, thus discouraging and stifling continued interest in academia. These factors may serve as early deterrents for medical students who may be oriented towards academic medicine. Furthermore, missed opportunities by senior researchers to encourage and mentor aspiring medical students may contribute to the already leaky physician-scientist workforce.

Medical students need the ability to navigate the collaborative research process competently in order to achieve the kind of positive experience that may foster continued interest in research. Aiming to improve medical students’ knowledge of one aspect of this process, basic publication ethics, this article outlines two authorship-related conflicts commonly encountered by medical students and provides guidance about how to avoid/manage them.

1. Authorship status

Scenario: “After being approached by a resident conducting a residency programme-required research project, I agreed to participate in data collection with the view to be included as an author. The project was published but I was not listed as a co-author. Has my name been wrongly omitted?”
Ethical and accepted practices

Authorship requires fulfilment of the four criteria based on the Vancouver guidelines put forward by the International Committee of Medical Journal Editors. All contributors who do not qualify for authorship (such as by participating in either data collection or manuscript proof reading) should be listed in the acknowledgement section with a description of their contribution(s).9

Recommendations

- Medical student research involvement is often limited to information gathering or data processing.6 This by itself does not justify authorship.

- At the outset of research involvement, determine your expected contribution and whether it meets authorship criteria.

- Consider using a written co-author agreement, formal or informal, to clearly establish roles of collaborators and facilitate open and honest communication between individuals involved in the project.

2. Order of authorship

Scenario: “After I drafted the manuscript for publication from my summer studentship, my supervisor submitted the article after reviewing it with me being the second author. May I protest this decision?”

Ethical and accepted practices

- Authorship order should be a joint decision of the co-authors.9

- Some research groups list authors alphabetically followed by a description of each author’s contribution.

- It is common practice that the first author is granted to the project member who has made the greatest contribution to the project, often the one who drafts the manuscript. Other factors may play a major part in deciding authorship order include proposal writing and obtaining research funding.

Recommendations

- Whenever possible, discuss and decide on the membership and order of authorship early in the research process and summarise the decision, preferably in writing.10

- In cases of disputed authorship:

  Pre-publication: Inform your supervisor that you are unhappy about this decision. If no progress is made, consider appealing to the head of department or research office in which the project was conducted.

  Post-publication: First discuss this with the other authors. Often, it is necessary to inform the journal’s editor and involve the concerned institution(s).

Conclusion

There is a perceived lack of awareness regarding publication ethics among medical students and novice researchers.8 Addressing this problem should start in medical school through the introduction of publication ethics teaching, preferably as part of literature appraisal and research methodology training. Furthermore, students involved in research should familiarise themselves with basic publication ethics and the Vancouver guidelines put forward by the International Committee of Medical Journal Editors.4 To prevent authorship disputes, the following issues should be discussed and documented in writing early in the research collaborative process: 1) degree and nature of contribution to the project and whether authorship criteria are met by each contributor, 2) order of authorship and 3) a written co-author agreement.

Positive research experiences during medical school have the potential to contribute immensely to the development of the physician-scientist workforce,7 the backbone of academic medicine. Medical students interested in research should be guided by structured programmes to promote research opportunities, offer full and authentic participation in research and provide an inspiring research environment and mentorship. Future research should focus on overcoming the above described challenges and exploring ways to improve medical student research and mentoring experiences.
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