

Navigating Research Enthusiasm in Medical Students Towards Clinically Impactful Articles

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Abstract

Learning medical research is an integral part of the development of a holistic physician. Although not all physicians become clinician-scientists, those who do enjoy significant privileges over their clinician-only counterparts, mainly in terms of faster career progression and higher employability. To produce more well-rounded clinician-scientists, academic physicians and medical scientists need to make themselves available and be willing to work with and mentor medical students. A curriculum reform is warranted where students should be encouraged to start learning and conducting research in their first year of medical school. To make the process even easier and help scale these ideas, students should be encouraged to replicate previous highly cited studies, as they can provide a walkthrough for students to follow, thereby necessitating lesser supervision while maintaining the clinical impact that can be made with their time and effort.

Key Words: Research; Medical Students; Journal Impact Factor; Mentorship; Learning; Evidence-based Medicine; Curriculum; Medical School; Medical Education (Source: MeSH-NLM).

Introduction

Learning research as a medical student is important for various reasons, such as the growing acknowledgement that clinician-scientists perform better as physicians.¹ In addition, publishing prior to graduating from medical school has shown to carry an even greater promise for the learning physician, both in terms of opportunities for postgraduate training and in academia.^{2,3} This awareness has increased the accessibility to basic research training and skill development, with numerous online and in-person courses to support learning. In order to progress from just the development of an exceptional idea to publication and gauging its clinical relevance, adequate experience in the specific field is required, and this is where students find themselves lost and without the help of a mentor. As a result, such students' articles only make it to journals with very limited readership and scope and the impact of their work remains limited.

According to two scientific studies, students who publish during their time in medical school were significantly more likely to continue publishing ($p < 0.001$), publish more frequently ($p < 0.001$), and have a mildly greater citation impact after graduation ($p = 0.005$).^{2,3} One of these studies also suggested that most students (87%) who perform research as part of their curriculum (research internship) complete medical training in the minimum amount of time.² These students were also likely to have a higher chance of securing employment in academic

medical centers.² Working under a mentor who focuses on clinical research, as well as one who has prior publication(s) with prior mentees, has shown to increase the likelihood that the mentee/student will publish research articles by successfully completing their tasks.⁴ Furthermore, students who were involved in research during their academic careers had increased motivation, while doctors, who had been involved in the same, formed accurate diagnoses.^{5,6}

It is apparent that publishing research in medical school years is difficult.² Therefore, there needs to be a systematic change, whereby medical schools adopt research as part of their curriculum.² For a start, clinical physicians with clinically relevant ideas could be paired with students who are available and interested in developing their skills to conduct research. Such a setting would also teach medical students valuable skills and traits that are deemed necessary for a future physician to possess, such as appropriate behavior towards team members, building team spirit,¹ and developing a strong work ethic, early in their careers.² Within their curriculum, students should be encouraged, and even guided, to read recent articles relevant to their module of study in widely acclaimed journals. This would help them understand the characteristics of good quality articles, making writing seem like a less daunting task. An effective first step towards execution would be to conduct the research module for students in their first year, as opposed to introducing it in the

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clinical years, so as to equip them with the researcher's perspective and the necessary skills at an early stage. Additionally, plenty of funding needs to be allocated to hire professors who are proficient in research methodology, to make latest guidelines and articles more accessible to students, as well as to enable the conduction and completion of research projects without a shortage of funds.⁶ In addition to this, motivating students to participate in research competitions and then sharing their experiences with their juniors will encourage more participation in research.⁶ Moreover, integrating compulsory, practically-focused statistics courses in their curricula will help students hone the much needed skillset of applying statistics in data analysis to make their own inferences.⁷ Furthermore, replication studies are a good opportunity for students to gain an initial insight, as they provide a rough walkthrough for researchers to conduct their study while allowing them to work on what has already been highlighted as clinically relevant. Many frequently cited studies are seldom replicated- a necessary step in improving the credibility of the scientific theories derived from these studies.^{8,9} The results obtained from these studies on the same topic across varying demographics, such as age, gender, geographical locations, or even time period, may present with diverse results

and thus could aid in broadening previous hypotheses and/or generating new predictions.^{8,9}

In conclusion, performing a study and writing a research article is undoubtedly a learning curve, with students starting small and progressing as they refine their skills. However, with the help of more experienced academic doctors and medical scientists, the growing interests of new researchers can be channeled towards clinically relevant and impactful research studies - a steer that will benefit both the students and academia at large.

Summary – Accelerating Translation

The importance of learning about research has increased for medical students around the world. As a result of their increased skill set, it helps individuals climb the job ladder more quickly and increase their employability. Academics in the medical field need to be more willing to offer their time to teach medical students who want to become academic physicians about their profession in order to make this all more feasible. If their curriculum pushes them to learn research, it can also aid in the objective of creating more academic physicians. This can be made simpler if students do previously published high-impact research because the same research can still have a significant influence when conducted on a different or even similar demographic. Because it takes less mentoring to replicate a study than it does to create one from scratch, replicating studies can also reduce the scarcity of academic mentors.

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