WHY JOHNNY CAN'T STOP WRITING:

THE BOOM IN LOW-IMPACT, POLITICIZED MEDICAL-STUDENT RESEARCH

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One might think that increasing the volume of research authored by medical students is a positive development. If research is good, then having more of it must be better, right? And if medical students are contributing to the growth in research activity, then that must mean that they are becoming more capable as experts in their fields at earlier stages of their careers.

Unfortunately, this happy story is not necessarily true. Having more research is good only if it is good research. If we dilute the pool of research with a growing number of lousy studies, poorly executed and promoting wrongheaded ideas, then we undermine the purpose of research. And if medical students are authoring more research to pad their résumés by conducting low-quality studies, then they will be exacerbating the degradation of the research enterprise. In addition, the time medical students devote to producing low-quality research distracts from their focus on acquiring the knowledge and skills required to be effective physicians.

This report examines the dramatic rise in medical student–authored research over the last two decades. It finds that medical student–authored or co-authored publications identified by our search method numbered fewer than a dozen per year in the early 2000s but, by the 2020s, exceeded 700 per year. The increase in medical-student research was driven in large part by their desire to pad résumés and compete for residency positions as other signals of quality, such as letter grades and continuous scores on standardized exams, disappeared.

The easiest and most common research medical students produce has typically been low-quality and highly politicized because they lack the time and training to produce more serious work. To the extent that medical students are involved in rigorous research, it is often as junior authors on projects initiated and led by their professors. The addition of medical students to multi-authored publications is likely an indication of gaming the competition for residency positions rather than an indication of their learning from involvement in research.

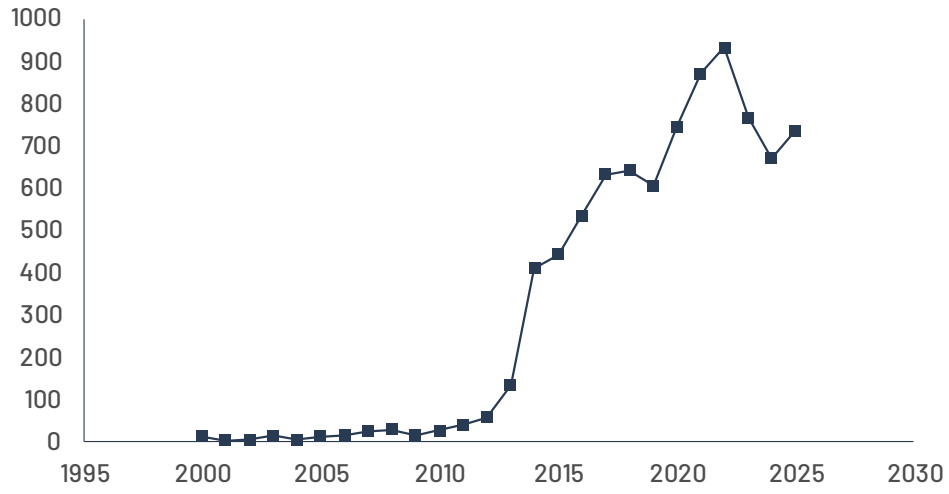
THE RISE IN PUBLICATIONS AUTHORED BY MEDICAL STUDENTS

To track the number of publications involving medical students as authors, we conducted searches of **PubMed**, which is affiliated with the National Institute for Health. **According to its own description**, "PubMed contains more than 40 million citations and abstracts of biomedical literature" and has been "available to the public online since 1996."

The advanced search function on PubMed allows one to identify all publications in which the affiliation of authors includes the term "medical student." This does not perfectly capture all publications written by medical students since some students may not identify themselves with this language and since some staff who serve medical students but are not students themselves may include this term in their job titles, as in the case of "director of medical-student affairs." Nonetheless, systematically searching for author affiliations that include the term "medical student" is a reasonable proxy for trends in student-authored research and has been used for this purpose by **several other researchers**.

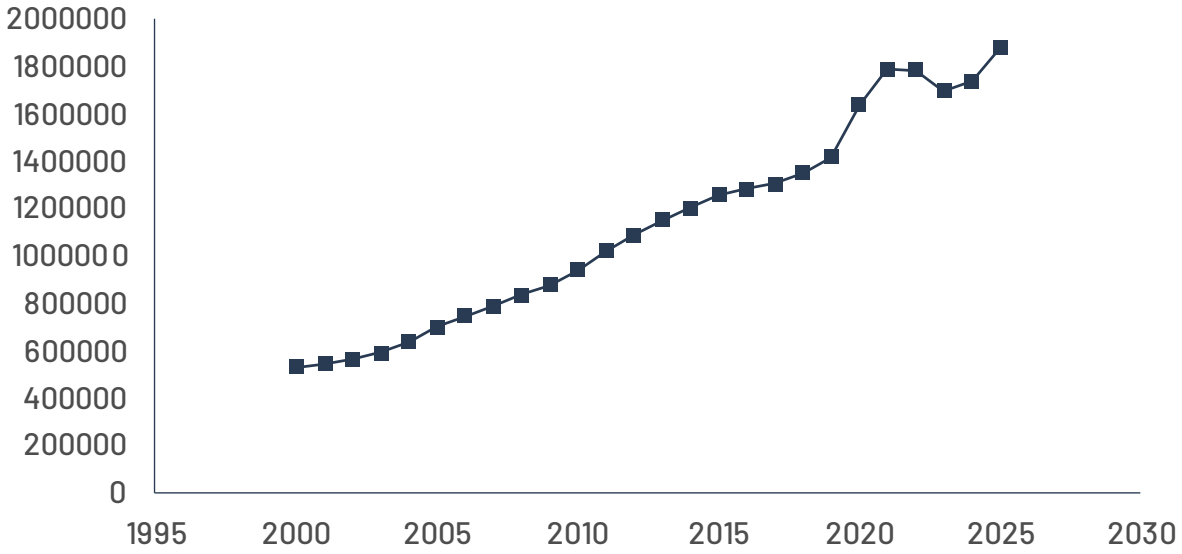
Using this method, we find that medical student–authored research was uncommon 25 years ago. (See Figure 1.) Between 2000 and 2006, no year had more than 17 publications with a student author. Between 2007 and 2012, the number of studies written by medical students per year fluctuated between 17 and 58. In 2013, student authorship rose to 135 publications and jumped again in 2014 to 411. By 2022, that number rose to 932 before slipping back to 735 in 2025. That recent decline may be distorted by the fact that PubMed is sometimes delayed in receiving and listing publications, sometimes by several years.

FIGURE 1: MEDICAL STUDENT PUBLICATONS PER YEAR



The number of publications tracked by PubMed over this period also increased but at nowhere near the same rate. (See Figure 2.) For 2000, PubMed lists a total of 532,634 publications, rising to more than a million in 2011 and hitting 1,877,304 in 2025. The increase from 2011 to 2025 is 84 percent for all publications; for those with medical-student authors, the increase during that same period is 1,738 percent.

FIGURE 2: PUBLICATIONS INDEXED IN PUBMED PER YEAR

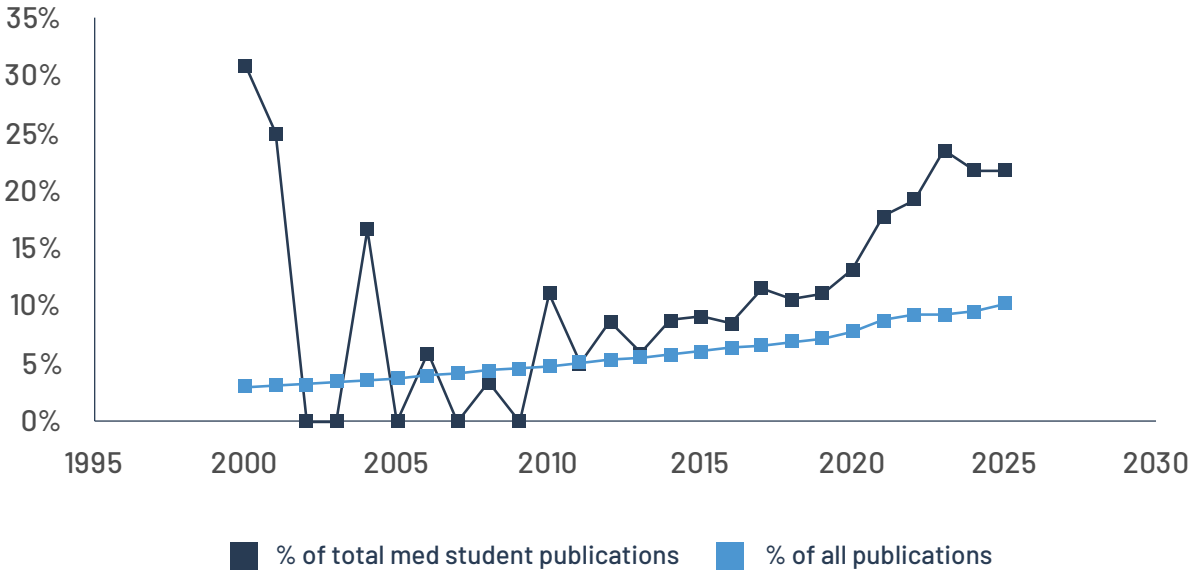


THE PREVALENCE OF WOKE RESEARCH

Medical student–authored publications do not only differ from other research in their rate of increase, but those studies also differ in how focused they are on woke topics. To gauge this kind of politicized research, we identified publications authored by medical students that contained at least one of the following woke terms in their title or abstract: "equity," "disparities," "social," "justice," "race," "racist," "racism," "diversity," or "inclusion." We applied these same search criteria to all publications in PubMed for comparison.

Between 2000 and 2013 only 26 out of the 408 articles (six percent) published by medical students contained at least one of these terms, suggesting only a modest focus on woke topics (e.g., identity-based power, systemic oppression, and the need for equal outcomes). (See Figure 3.) During the period 2014 to 2020, the percentage of publications with medical-student authorship that contained one of these terms in their title or abstract rose to 11 percent. And between 2021 and 2025, more than a fifth (21 percent) of medical-student publications had at least one woke term in their title or abstract.

FIGURE 3: PROPORTION OF PUBLICATIONS WITH WOKE BUZZWORDS



Note: The volatility in medical-student publications from 2000–2010 is due to the low number of student publications during that period.

Among all publications included in PubMed, the percentage of articles containing at least one of these terms in their title or abstract also rose over time but not nearly as dramatically as among those authored by medical students. The percentage of article titles or abstracts that contained a term suggesting a woke topic was four percent between 2000 and 2013, rose to seven percent during 2014 to 2020, and increased to nine percent between 2021 and 2025. Among all articles, woke terms were typically less than half as common among all publications as among student-authored publications. And over the entire period, the woke rate doubled for all articles but more than tripled for those written by medical students.

It is important to note that the search terms we used are imperfect proxies for whether publications were politicized. Many of these terms can also be used in non-politicized contexts. For example, the "inclusion criteria" for a study doesn't have the same political meaning as studying whether medical schools are effectively promoting "inclusion." The ambiguity of these terms can lead to false positives.

At the same time, searching for a handful of terms doesn't capture the full spectrum of woke topics that articles might address. And even this limited set of terms might be prominent in the text of an article even if they do not appear in the title or abstract. The incompleteness of our search method could also lead to false negatives.

Nonetheless, we can be reasonably confident that the trends we observed suggest a relative increase in the woke focus of articles written by medical students. There is no reason to believe that the non-politicized meanings of the search terms should become more common over time. And there is no reason to believe that the imperfections of our search method should apply more to student-authored work than to all articles in PubMed. The fact that articles with these woke terms are becoming much more common across time among student publications and are increasing at a much higher rate there than among all publications strongly indicates that a rising woke focus is a particular issue for medical student–authored articles.

THE CHALLENGE OF PRODUCING QUALITY RESEARCH

Despite disproportionately and increasingly being devoted to woke topics, medical-student publications might arguably be rising in quality. For example, **a recent analysis** concluded, "Our study demonstrates that medical student research has undergone dramatic growth in both volume and quality between 2003 and 2023." **A different study**, however, found that the rise in student-authored articles was marked by a significant decline in quality: "There was a relative increase in perspective papers and a decrease in case reports. Approximately one in four medical student papers were never cited, and approximately one in six were published in a journal with a publication fee."

Parsing the evidence presented by these competing studies and considering additional data we have collected, we see clearly that the quality of medical-student publications is actually declining as the volume is increasing. To the extent that medical students are involved in higher quality research, it tends to be as a junior author on projects initiated and led by their professors. The addition of students as junior authors on multi-author projects may reflect résumé-padding incentives more than learning growth among students.

It should also come as no surprise that medical students are unlikely to produce quality research. In most disciplines focused on producing rigorous research, students are required to take several semesters of research-methods and statistics classes before they are qualified to make scholarly contributions. Virtually no medical student has several weeks of this kind of training in the standard preclinical program, let alone several courses. Medical students are generally very smart and motivated, but they are no better able to conduct scientific research without adequate preparation than they would be to conduct open-heart surgery without formal training.

THE QUALITY OF MEDICAL STUDENT–AUTHORED RESEARCH: HAUSNER ET AL.

The **study** claiming that medical-student research is improving in quality was led by Christian J. Hausner at Wayne State University and was published in *PLOS One* earlier this year. It uses PubMed searches to identify articles authored by medical students and residents. Its primary metric for assessing quality is the Relative Citation Ratio, or RCR, of these articles. The study's conclusion that medical-student publications are rising in quality over time is based on its observation that the median RCR of student work increased from 2003 to 2023 and is greater than that of resident-authored publications.

There is reason to doubt whether RCR is a reliable indication of quality. It is a metric adopted by the NIH **to gauge how frequently articles are cited relative to other articles in the same field and of similar vintage**. An RCR of 1 would mean that an article was cited as many times as another article produced with NIH funding published in the same year. **Some have raised technical objections** to the algorithm used to compute RCR. **Others have noted that**, "like all other citation-based indicators, the RCR cannot measure the quality of research," since citations suggest only **influence, not quality**.

But its reliance on RCR is not the critical flaw of the Hausner et al. study. The main difficulty with its analysis is that it examines only a relatively small subset of all publications authored by medical students. PubMed classifies all publications into 66 possible "article types." The Hausner study filters out most types of articles, seemingly focusing on those that might be more likely to contain rigorous research, such as "case reports," "clinical trial[s]," "meta-analys[e]s," and "systematic review[s]." It excludes more than two-thirds of the article types, including "comment[s]," "consensus statement[s]," "editorial[s]," "evidence synthes[e]s," "guideline[s]," and "personal narrative[s]."

The net effect of Hausner et al.'s filtering out of most article types is that the authors likely exclude more than two-thirds of all publications authored by medical students that were collected by PubMed.[1] The description of the criteria for exclusion of the vast majority of student-authored articles cannot be found in the text of the Hausner et al. study. It is buried in a supplemental file, which still does not describe how many articles those criteria exclude. In addition, nowhere in Hausner et al. do the authors explain or justify focusing on only a small subset of all publications. It is also important to note that the Hausner et al. study uses the terms "research," "article," and "publications" interchangeably, giving the false impression that the authors are examining the full set of medical student–authored work when they are actually drawing conclusions from only a narrow and distorted subset.

Perhaps Hausner et al. chose to focus only on types of articles that seem more like "research." But in doing so they are ignoring the large and growing set of student-authored articles that are less rigorous and almost by definition likely to be of lower quality. If one excludes the kinds of publications that tend to be of lower quality, it is no surprise to find research quality rising over time. Thus, the Hausner et al. study borders on tautology, finding that medical-student publications are rising in quality once one excludes the growing set of low-quality publications.

1 When one applies the exclusion criteria implemented in Hausner et al.'s study to the time horizon considered in this report (2000–2025), 72 percent of PubMed publications are filtered out.

THE QUALITY OF MEDICAL STUDENT-AUTHORED RESEARCH: A NEW ANALYSIS

To evaluate whether Hausner et al.'s conclusions might change upon examining the full body of work by medical students, we collected **more detailed information** on the RCR and authorship positions for a randomly selected (via random-number generator), representative sample of 686 articles drawn from the 7,585 PubMed-indexed publications with medical-student authors between 2007 and 2024. We excluded the years before 2007 because none had more than 17 publications, making summative annual results volatile and unreliable. We also excluded articles from 2025 because they were generally not old enough to have reliable RCR information, given that it takes time for articles to be cited by other articles.

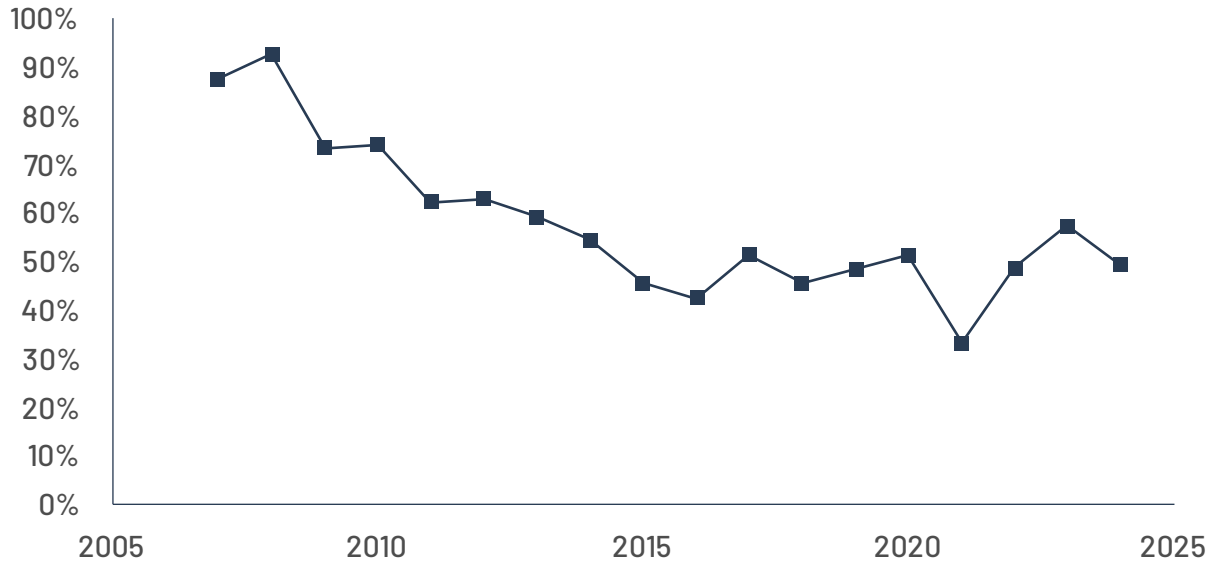
The most striking result from examining a sample of all publications rather than the selected types of articles considered by Hausner et al. is that that study's exclusion of most publications inflated RCR results. The median RCR for all publications we examined between 2007 and 2025 was 0.36. The median RCR for the selected articles Hausner et al. examined between 2003 and 2023 was 0.47. If Hausner et al. had excluded the unstable results from a very small number of studies in the early 2000s, as we did, their median RCR would have likely been even higher.

Clearly, their exclusion of the vast majority of medical student–authored articles inflated and distorted their RCR results. In addition, it is important to note that all the median RCR results for medical-student publications are far below 1, which is the average for NIH-funded projects on the same topics published in the same year. That is, medical students publish articles that are far below average in influence (or quality) in all years, whether we select certain types of articles or consider all publications. Medical students are typically not producing very good or influential research no matter how we slice it.

Hausner et al. also acknowledge that "our analysis did not directly quantify the influence of medical student or resident authors on their respective publications by authorship position." This omission could be important because it is likely that articles initiated and led by medical students tend to be of lower quality than those led by others who add students as junior authors. To remedy this omission, we collected author-position information for the representative sample of 686 publications authored by medical students between 2007 and 2024.

We discovered that there has been a dramatic decline in the percentage of publications involving medical students that list the student as the first author. (See Figure 4.) Between 2007 and 2010, 82 percent of articles involving medical students in each year had the student as the first author. During the years 2011 to 2014, the average annual rate of student-led articles dropped to 60 percent. And between 2015 and 2024, that rate fell to 47 percent.

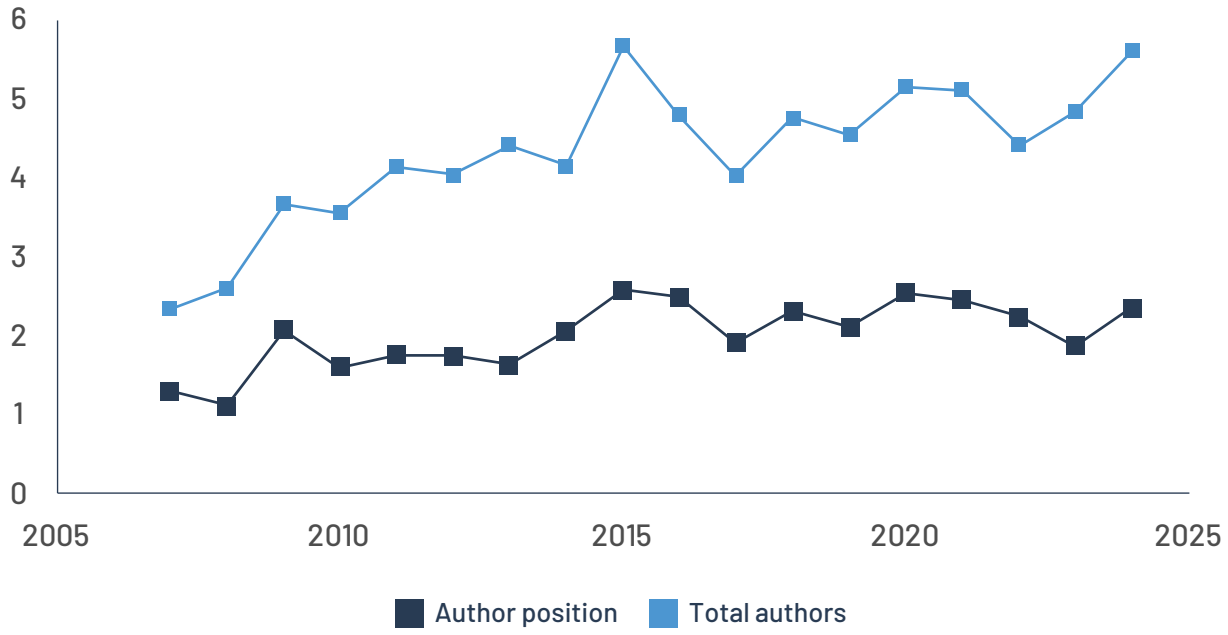
FIGURE 4: PUBLICATIONS WITH STUDENT AS FIRST AUTHOR



Importantly, articles with medical students as the first author had significantly lower RCR measures. The median RCR for publications led by medical students over the entire period we examined was 0.21, compared to 0.50 for articles in which medical students were in any authorship position other than first. That gap in influence (or quality) of 0.29 helps explain why median RCR measures are not plummeting over time as medical students are involved in many more publications. Students are increasingly being added as junior authors on projects initiated and led by others.

The same trend can be observed by recording the ordinal authorship position medical students have on articles. We recorded the authorship position of the first medical student listed on each of the 686 articles we examined between 2007 and 2024, where 1 meant he or she was the first author, 2 meant he or she was the second author, and so on. As can be seen in Figure 5, the median authorship position for medical students changed significantly over time. During the years 2007 and 2010, the average annual median authorship position was 1.52, meaning that students were typically first or second author on articles in roughly equal measure. Between 2011 and 2014, that figure rose to 1.80. And more recently (2015–2024), the average median student authorship position was 2.28, meaning that students were typically less than second author on publications in which they were involved.

FIGURE 5: MED STUDENT AUTHOR PLACEMENT



The total number of authors involved in publications also rose over time. (See Figure 5.) Between 2007 and 2010, the typical article involving a medical student had 3.04 authors, rising to 4.18 between 2011 and 2014. During the period 2015 and 2024, articles involving student authors typically had almost five total authors. Students are being added to projects with more authors in a lower authorship position.

Interestingly, Hausner et al. report that 44 percent of the selected set of articles they examined had medical students as first authors, compared to 53 percent of the representative sample of all publications we examined. The increasingly common practice of adding medical students as junior authors on articles masks the lower quality of research initiated and led by students. And by focusing on a subset of publications less likely to be led by students, Hausner et al.'s analysis further masks the problem.

THE QUALITY OF MEDICAL STUDENT-AUTHORED RESEARCH: ELLIOTT ET AL.

Elliott et al. also examined articles published with medical-student authors between 2012 and 2022 and produced very similar results to those from our own analysis. Elliott et al. considered all publications with "medical student" listed in the author affiliation and found a dramatic rise in student-authored work. Their study also found that "the percentage of articles with a medical student first author decreased from 63% in 2012 to 48% in 2022," figures nearly identical to the results we obtained for those years by drawing a representative sample.

Elliott et al. did not collect RCR measures, instead focusing on unadjusted citation counts. They found that **the percentage of articles authored by medical students that had never been cited** increased from seven percent in 2012 to 50 percent in 2022. This pattern suggests a decline in the influence (or quality) of research by medical students during this period, but the lack of citation may be affected by the recency of the publications. So this evidence is not as convincing as RCR, which compares citations for articles published in the same field during the same year. Nevertheless, the fact that half of articles published by students in 2022 had never been cited by 2025, when Elliott et al. completed their analysis, is a strong indication of low influence and likely low quality.

Elliott et al. also collected information on whether the journals in which medical-student work was published charged fees for submissions or publication. Journals that charge fees are typically considered to be of lower quality because financial rather than meritorious considerations may influence the likelihood that articles are published. Elliott et al. find that a substantial proportion of student-authored research can be found in journals that charge fees and that "the frequency of publishing in one of these journals with associated costs increased from 2012 — 3.7% to 2022 — 14.8%."

EXAMPLES OF LOW-QUALITY AND POLITICIZED RESEARCH

The evidence is abundantly clear that the rising volume of articles authored by medical students is both of low quality and relatively focused on politicized topics. A few examples of this kind of work by medical students help illustrate how serious this issue is:

"REFORMING MEDICAL CURRICULA TO SUPPORT INDIGENOUS STUDENTS AND REDUCE HEALTHCARE DISPARITIES," *Journal of Medical Education and Curricular Development* (2025).

The first and third authors on this three-author article are identified as medical students at the John Sealy School of Medicine, University of Texas Medical Branch in Galveston, Texas. According to the article's own description, "This narrative literature review explores the educational experiences of Indigenous medical students and examines evidence-informed strategies to enhance cultural competency and inclusion within medical curricula."

If one were genuinely interested in understanding what academic research broadly says about the educational experiences of indigenous medical students, this article does not offer that. The authors' search of a publication database conducted according to criteria that are not fully described yielded 202 articles. Only 41 of these 202 articles were fully examined, for reasons that are never explained. An additional 31 articles were eliminated from consideration "based on relevance to the research aims and quality of discussion." There is no description of what made three-quarters of the studies the authors read less relevant or insufficient in their quality of discussion. Even after including three additional articles because they were found in the citations of the other 10 the authors had selected, the authors still based their review on only six percent of all studies initially identified.

Their methodology amounted to reading about a dozen selected articles and then saying what they thought about what they read. The 13 studies the authors reviewed are never identified and listed, and claims are sometimes attributed to the reviewed studies without citation. The reference section contains 10 citations, of which only six are found in the results section of the article. Only four of those six citations could possibly be among the 13 studies included in the review. It would be impossible to replicate this study and confirm that the authors even accurately described the 13 studies they considered.

In addition to these methodological flaws, the article is poorly written, with unnecessarily opaque jargon and obvious political agendas. For example, the authors write, "Indigenous students frequently narrate experiences of otherness in medical school" and "silencing and invisibilization [*sic*] emerge as both a coping mechanism and a symptom of broader institutional failures."

In an example of sloppy thinking, the authors attribute "systemic disparities" to the dominance of "European medical perspectives" and the assignment of "European studies" when they almost certainly mean Western or American, since U.S. perspectives and research dominate medical-school curricula. In addition, they blame "a sense of isolation for Indigenous students"

on insufficient attention to "holistic care and community-centered improvement" without providing any evidence about how much those concepts are addressed in U.S. medical schools or establishing their scientific merit for inclusion in the training of physicians.

"ADDRESSING HEALTH INEQUITIES IN THE UNITED STATES: A CASE REPORT ON AUTISM SPECTRUM DISORDER (ASD) AND SOCIAL DETERMINANTS OF HEALTH," *Cureus* (2023).

The second of the five authors listed for this article was a student at Florida International University's Herbert Wertheim College of Medicine in Miami, Florida. The other four authors are described as part of the pediatrics faculty. The article is a case report describing how "the challenges and demands of caring for a child with ASD [autism spectrum disorder] are amplified for those facing the repercussions of several social determinants of health, namely lack of health insurance and low socioeconomic status."

The child with ASD profiled in this case report is a five-year-old boy who immigrated to the U.S. with his single mother and older sister after having been born in Honduras. The family lacks medical insurance because they cannot afford private insurance, and, "given his family's current immigration status, the patient is not eligible for Medicaid." The child does receive a variety of free services. Those include Applied Behavior Analysis therapy through a grant from a local advocacy group, speech and language therapy with an individualized education plan at his public school, medical care at a free community-care clinic, and food donations.

Despite these kinds of assistance, it is clear that the child could benefit from additional services, and the financial and logistical barriers facing the family make that challenging. It is a very sad story that raises questions about how social-assistance programs are structured and delivered, but it is unclear what this has to do with the kind of care doctors can provide. Other than writing a prescription to help manage the child's behavior, it is unclear what in this case report falls within the responsibility of a physician.

Whether this child is eligible for Medicaid is a matter for voters and policymakers to decide. How the family manages the difficulties of using public transportation to get to medical appointments or work is something that physicians should generally understand but that is not within their control. Similarly, the financial challenges associated with being a low-income single parent are not primarily medical issues. Social workers and public officials can help address these issues, not doctors.

So why is this case report published in a medical journal, and why is a medical student involved in writing it? Nothing in the article would meaningfully alter what doctors should do to provide appropriate medical care. It is obvious that the purpose of the article is to advocate for changes in public policy, such as changing the eligibility criteria for Medicaid or increasing the generosity of public-assistance programs.

Whatever one thinks about the merit of these public-policy stances, there is no reason why this type of advocacy should be part of medical research. It helps improve neither the training of

doctors nor their practice. Any reasonably informed adult is aware that it is difficult being poor, and navigating public-assistance programs can be challenging. The article is simply an exercise in public-policy advocacy, not medical scholarship.

Worse, it misinforms the reader by failing to consider the tradeoffs and limitations involved in public assistance. There is no free lunch. Someone has to pay for expanding Medicaid eligibility or increasing the level of public assistance. Those public costs can also negatively affect low-income people, either by being directly imposed on them or because they might experience diminished opportunities from others who do have to bear those costs. Any public-policy researcher would be negligent if he or she did not consider these tradeoffs, but because they pose as medical researchers, these authors think they have license to ignore the complexity of public-policy debates while still failing to contribute to the practice of medicine.

"FILLING THE GAP: CREATING A STUDENT-RUN LGBT+ CLINIC TO ADDRESS HEALTH DISPARITIES," *Academic Medicine* (2022)

This publication is a letter authored by three medical students at the Indiana University School of Medicine. The letter describes a study and an intervention initiated by those students. The authors were concerned that "the lesbian, gay, bisexual, transgender, and other sexual and gender minority (LGBT+) community experiences various health disparities, from increased risk of suicide to cancer." They administered a survey to medical students in Indiana and "found that medical trainees are unsatisfied with their exposure to LGBT+ health topics." As a result of these findings, the medical-student authors are "developing a student-run outreach clinic that caters to the LGBT+ population and includes training for medical students on LGBT+ health topics and respectful, affirming care."

Again, the scientific merit of this publication is eclipsed by its political nature. A survey asking medical students if they are "unsatisfied with their exposure to LGBT+ health topics" is not a scientific basis for determining whether the curriculum needs to be altered or initiatives need to be launched. Why would we think that the medical students would better know what should be prioritized in medical training than the faculty who design and teach that curriculum? A scholarly approach would go beyond asking students whether they are unsatisfied and might at least evaluate the effectiveness of the clinic they are developing on health outcomes for the patients it serves and the medical students who work in it.

While this publication is lacking in scientific value, it has clear political purposes. It seeks to establish that LGBT+ patients are improperly served by the medical system, that focused clinics would be beneficial, and that certain types of treatments, such as affirming care, would have positive results.

Of course, this medical-student publication is only a letter, so why should it matter whether it is more political than scientific? **As medical students are advised**, "LTEs [letters to the editor] count as publications, which can be a bridge for an early career researcher." Applications for residency programs list all publications, including letters, and the overall count of publications

is part of what program directors consider when deciding which applications to examine more closely.

In addition, the journal in which this letter appeared, *Academic Medicine*, **has a high impact factor** and is considered one of the leading outlets in its field. It is affiliated with the Association of American Medical Colleges, which serves as the main voice of and service provider for academic medicine in the United States. Lastly, this letter has an RCR of 0.78, which is well above the median for student-authored publications. Even letters can be influential and consume significant time and attention from the medical students who write them.

CAUSES AND SOLUTIONS

Many experts who have examined the issue of rising medical-student publication attribute the increase to changing the reporting of results for the Step 1 exam (a test that measures medical-student knowledge of pre-clinical course material) to pass/fail. **As Elliott and Carmody note**:

> At competitive residency programs, program directors increasingly use research productivity to discriminate among applicants. In the National Resident Matching Program's most recent survey, program directors rated involvement and interest in research as being as important as membership in Alpha Omega Alpha or the Gold Humanism Honor Society when deciding whom to interview or rank, and 41% of program directors in a different national survey reported that research participation will become more important after the transition to pass/fail scoring for Step 1 of the United States Medical Licensing Examination (USMLE).

But the reality is that the change in reporting grades for the Step 1 occurred in January 2022, and the rise in medical-student publications precedes that by several years. The sharpest increases occurred around 2013–2014. (See Figure 1.) It is possible that medical students anticipated the change in Step 1 to some extent, but that could not account for trends several years earlier.

The change in how Step 1 is graded was preceded by more than a decade of medical schools changing the grading of pre-clinical coursework to pass/fail. This change was not implemented everywhere simultaneously. It was rolled out gradually, fueled by the argument that **pass/fail grades would reduce stress** and **promote equity**. This change in how classes during the first two years of medical school were graded was encouraged by the **AMA** and other leading medical associations.

But the result of the change in medical-school grading to pass/fail, and ultimately changing Step 1 to pass/fail, is that it provided strong incentives to students seeking competitive residencies to increase the number of publications they could list on their applications. **Wolfson et al**. describe this as an "arms race in medical student research," producing more dramatic increases in more competitive fields. Given that **the average application for those who matched into a neurosurgery residency in 2024 listed 37 publications** (abstracts, presentations, and publications), the need to produce comparable numbers is further encouraging quantity over quality.

A medical student interested in pursuing neurosurgery — or any other competitive residency — would

be far better off devoting energy to mastering the science in the field and spending time on relevant rotations than producing lousy research to pad his or her résumé. This is especially true considering that almost none of the medical students wasting time on mostly useless research are preparing for a future career as researchers. They should be learning the knowledge and skills required for their practice of medicine, which is what most will be doing for the rest of their professional lives.

The most important solution to reverse this "arms race" in medical-student publication is to reverse its initial cause — the shift to pass/fail grading. When students can meaningfully differentiate themselves through strong performance in coursework and on standardized examinations, they will have less incentive to chase numerous low-value publications, allowing them instead to devote their efforts towards building a strong scientific and clinical foundation that will ultimately benefit their future patients. Recent legislation in **Louisiana** requires public medical schools to distinguish student performance with at least four distinct performance levels (e.g., letter grades or "high-pass," "pass," "low pass," "fail"). If other states were to do the same, it could significantly curtail the incentive for medical students to pad their résumés with more publications.

Other proposed solutions, such as capping the number of publications students can list on residency applications or encouraging residency-program directors to pay more attention to the quality of publications, are less likely to be effective but may still be worth pursuing. Limiting the number of publications on residency applications would require those who control the Electronic Residency Application Service to adopt this measure voluntarily, and it is unlikely that there is sufficient internal support for any such change. Getting the large and diffuse set of program directors to coordinate to cap the influence of publication counts also appears unlikely.

The most promising reform strategy for curtailing the rise in low-quality and politicized research produced by medical students is to redirect their time and energy toward genuinely mastering their coursework, with the pursuit of higher grades — and thus academic distinction — adding additional motivation. More importantly, this approach refocuses students on most fully acquiring the knowledge and skills they need to be effective physicians rather than cosplaying as researchers.

Do No Harm