Just a slice: Surgeon-scientists reap small share of US research grants

May 17 2023, by Mallory Locklear

Credit: Michael S. Helfenbein

Though 30% of the global burden of disease is treatable through surgery, surgeon-scientists make up less than 2% of U.S. researchers who receive funding from the National Institutes of Health (NIH), a new Yale-led study finds. This underrepresentation affects surgical innovation, and ultimately, patient care, the authors say.

The findings were published May 17 in *JAMA Surgery*.

Surgeon-scientists work at the intersection of research and patient care, says Alan Dardik, professor of surgery at Yale School of Medicine and co-senior author of the study. "We know the patients and we know the research, and we can bring the two together," he said. "Most surgeon-scientists will invent what we do in 10 to 15 years. So it's really about the future of health care and how we can do better for our patients."

To better understand the share of U.S. funding allocated to surgical research, and whether it has changed over time, the researchers analyzed data from the NIH Research Portfolio Online Reporting Tools Expenditures and Results database. They specifically looked at project grants funded between 1995 and 2020.

They found that while the number of NIH-funded researchers affiliated with surgical departments increased over that time—as did total funding to those researchers—the proportion of surgeon-scientists receiving funding remained low across the 25-year period. Increases in grants and funding during that time largely went to Ph.D. scientists in surgical departments, not surgeon-scientists with M.D.s or M.D.-Ph.D.s, the researchers found.

"Most of the funding—approximately 60%—went to Ph.D. scientists, and that rate hasn't changed since 1995," said Mytien Nguyen, an M.D.-Ph.D. student at Yale School of Medicine and lead author of the study. "And we found that the funding gap between surgeon-scientists and Ph.D. scientists in surgical departments increased from $73 million in 1995 to $208 million in 2020."

The researchers also found that surgeon-scientists represented just 1.5% of all NIH-funded researchers in 1995. By 2020, that proportion had fallen to 1.4%.

When the researchers assessed funding across surgical specialties, they found that the number of grants to neurosurgeons and otolaryngologists steadily increased over the time period while funding to urologists decreased significantly. These findings reflect the differences in culture across specialties, said Dardik.

"Different specialties have different cultures, and each culture has various implications on whether a surgeon-scientist will flourish," he said. "Providing a supportive culture within surgical departments to which surgeon-scientists belong is one way to address this underrepresentation in surgeon-scientist research funding."

Another is for departments and institutions to provide protected research time to surgeon-scientists, the authors said. Clinical and administrative responsibilities take time away from research endeavors, which can be particularly detrimental to junior faculty in a career stage where publishing is imperative.

Additionally, embracing team-based science may be an effective strategy for boosting surgeon-scientists' research, they said.

"Research has shown that team-based science, especially when led by diverse teams, produces the most innovative and high-quality research," said Nguyen.

In the current study, the researchers found that most surgical research grants with multiple principal investigators did not include surgeon-scientists on the team.

"It's important to address this disparity, not only for equity among individuals and individual physicians, but for patient outcomes as well," said co-senior author Dowin Boatright, formerly of Yale School of Medicine, who is now vice chair of research in the Department of

Emergency Medicine at New York University Grossman School of Medicine.

Along with efforts at departmental and institutional levels, there's a role for surgical societies as well, according to the researchers. Some have already established programs to further support early-career surgeon-scientists, such as the Society for Vascular Surgery Foundation, which offers supplemental funds to researchers with NIH career development grants, helping junior faculty build their research programs and later earn larger independent research grants.

Ultimately, say the researchers, funding more surgeon-scientists will help improve the patient experience down the road.

"Most clinicians take care of patients, and most scientists solve research problems, and there are very few clinician-scientists that live in between," said Dardik. "But the philosophy of most surgeon-scientists is that we can always make it better. We can provide the next breakthrough. We can make it safer. We can make it less expensive. But somebody has to do it. We are undervaluing what surgical research is in a fundamental way."

More information: Mytien Nguyen et al, Rates of National Institutes of Health Funding for Surgeon-Scientists, 1995-2020, *JAMA Surgery* (2023). DOI: 10.1001/jamasurg.2023.1571

Provided by Yale University