MedicalXpress

Female surgeon scientists claim more than their share of research grants

July 17 2020

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While their ranks in academic surgery may be not be robust, women surgeons are holding their own when it comes to surgical research, securing a greater percentage of National Institutes of Health (NIH)

grants than their numbers suggest. However, their overall numbers remain low and academic medicine still needs to do more to encourage this emerging generation of surgeon scientists, according to authors of a new study of surgical research who report their findings in an "article in press" on the *Journal of the American College of Surgeons* website ahead of print.

"Females are underrepresented in academic surgery but hold a greater than anticipated proportion of NIH funding," said corresponding study author Shayna Showalter, MD, FACS, associate professor of surgery, University of Virginia Health System, Charlottesville. "To me, this means that female surgeon-scientists are a crucial component of future surgical research. They have been able to succeed even in a very competitive research environment."

The study queried the number of NIH R01 grants from surgery departments as of October 2018 and found that 212 held by 159 principal investigators (PIs) were in place, 49 of which were held by 42 women PIs. That means women represent 26.4 percent of these R01 grant holders while representing 19 percent of the academic surgical faculty, according to Association of American Medical Colleges data. The study chose R01 grants because they are the most common and historically oldest form of NIH grant with a track record of productive, high-quality research.

Women were more likely to be first-time grant recipients than men (73.5 vs. 54.8 percent, p=0.03) and less likely to have multiple grants or previous NIH funding (8.6 vs. 21.4 percent, p=0.03), the study found. "What I hope this shows is that we are potentially shifting away from the tradition of giving more funding to longstanding, proven researchers and that we continue to focus on awarding funding to a diverse group of accomplished researchers. We know that female surgeon-scientists are doing very good work," Dr. Showalter said. "Females in this study were

twice as likely to be first-time grant recipients. As a community, we need to ensure that first-time grant holders continue to be taken seriously and are awarded NIH funding when appropriate."

However, funding for surgical research is shrinking. The study notes that the bias toward researchers with previous grants is "worrisome for all surgeons" because the number of funded R01 grants has declined 17 percent in recent years, with surgeon-led studies having a mean success rate considerably lower than the mean NIH funding rate (16.4 vs. 19.2 percent, p=0.011), according to a previously published study in the *Journal of the American College of Surgeons*.

Another disparity the study uncovered was that female investigators had fewer published articles about their research than their male counterparts, which persisted even when the study authors applied the grant impact metric which controls for total amount of funding. "This difference may be related to the number of first-time grants and is consistent with prior knowledge that women in academic surgery have fewer publications in general than men," Dr. Showalter said.The study found that women grant recipients were more likely to be from departments with a female chair (31 vs. 13.7 percent, p=0.01) or a department that was more than 30 percent female (35 vs. 18.2 percent, p=0.03). The study authors recommend a number of strategies for academic surgery departments to nurture and promote female researchers. "One of the strategies is having strong mentorship and sponsorship programs," said Dr. Showalter. "We know that successful academic surgeons value mentorship, often having more than one mentor throughout their career."

Another strategy is for academic settings to continue to hire and promote female surgeons. A 2018 study found that women held only 7 percent of the full professorships among surgeon faculty at U.S. medical schools.[2] "Institutions must continue to support the academic advancement of female surgeon-scientists and to advocate for females in leadership

positions. This will allow for a strong group of women to mentor the women behind them," Dr. Showalter said. "But we do have a paucity of female leaders in high-powered positions, including chairs and deans of surgical departments and leaders within societies."

The study reveals that women researchers are doing high-quality work in surgery, Dr. Showalter said. "There are some great female surgeon-scientists, and we have many more with potential that will be crucial to the future of surgical research," she said. "As a community within academia, we need to continue to work to figure out the best way to support and promote a diverse faculty."

More information: Elizabeth D. Krebs et al. Changing Face of Academic Surgery: Surgeon-Scientists with R01 Funding Are Disproportionally Female, *Journal of the American College of Surgeons* (2019). DOI: 10.1016/j.jamcollsurg.2019.08.321

Provided by American College of Surgeons