

The effect of receiving an award from the American Association for Thoracic Surgery Foundation



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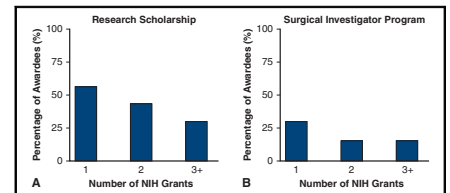
ABSTRACT

Objective: This study's objective was to evaluate the scholastic and career effects of receiving either the American Association for Thoracic Surgery (AATS) Foundation research scholarship or surgical investigator program.

Methods: AATS annual reports and recipient listings were used to generate the awardees. MEDLINE and SCOPUS were used to assess publications, citations, and H-Index for awardees. The National Institutes of Health (NIH) RePorter was used to collate NIH grant awarding to awardees. Publicly available institutional profiles were used to assess promotion status and leadership positions.

Results: Awardees of the research scholarship had a median of 4733 citations and a median H-Index of 33. The surgical investigator program recipients had a median of 1346 citations with a median H-Index of 17. Across both funding mechanisms, 45% secured subsequent NIH funding. Most awardees received an academic promotion, with 62% of the research scholarship awardees promoted to full professor and 37% of the surgical investigator program to associate professor. Approximately half (48%) of all awardees hold leadership positions, with most being a clinical director or division chief.

Conclusions: Receiving the AATS Foundation research scholarship or surgical investigator program positions early-career cardiothoracic surgeons for a promising future in academic surgery. (JTCVS Open 2022;10:282-9)



Percentage of eligible (A) research scholarship and (B) surgical investigator program awardees who secured subsequent NIH grants.

CENTRAL MESSAGE

Receiving either research grant from the AATS positions early cardiothoracic surgeons for an academic career through increased scholastic contribution, NIH grant funding, and leadership positions.

PERSPECTIVE

Excelling in academic surgery requires balancing cardiothoracic surgery and research. The AATS Foundation provides 2 funding mechanisms for early career surgeons—the research scholarship and surgical investigator program. This study shows a substantial benefit in receiving either, with significant scholastic contributions and high NIH grant success rates, propelling one's academic surgical career.

See Commentaries on pages 290 and 291.

Cardiothoracic (CT) surgery trainees might have a high degree of interest in academic surgery.^{1,2} Pursuing academic

surgery can afford the so-called “triple threat,” by which a surgeon excels in surgical practice, research, and education. However, achieving this distinction can be elusive.³ Placement and subsequent advancement through these tracks are not easy feats, with continual effort required in several disciplines. First and foremost, one must have surgical excellence, which alone necessitates a tremendous commitment of time and effort. Next, scholarly contributions are carefully measured. These take the form of publications, either in clinical, translational, or basic science, and grant funding. The decreasing pay line of national funding agencies and the essential requirements to be a proficient CT surgeon creates a challenging environment to secure grants. In fact, across all surgeons, less than 1% are funded⁴ alongside reported decreases in CT surgeon funding.⁵ Last,

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Read at the 101st Annual Meeting of The American Association for Thoracic Surgery: A Virtual Learning Experience, April 30-May 2, 2021.

Received for publication May 3, 2021; accepted for publication Oct 25, 2021; available ahead of print March 17, 2022.

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2666-2736

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Abbreviations and Acronyms
 AATS = American Association for Thoracic Surgery
 CT = cardiothoracic
 IQR = interquartile range
 NHLBI = National Heart, Lung, and Blood Institute
 NIH = National Institutes of Health

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becoming a good educator often requires the onerous requirement of leadership positions, further requiring devoted time. Despite a finite amount of time to spread among these endeavors, these metrics are still the basis for climbing the academic ladder.⁶

Founded in 1917, the American Association for Thoracic Surgery (AATS) is a leading organization whose mission is to cultivate the next generation of CT surgical leaders. This is accomplished through the continual effort of the AATS Foundation, a group within the AATS that serves as the vehicle to promote the next generation of leaders. The foundation has over 30 programs, with the 2 most prevalent ones being the AATS research scholarship and the AATS surgical investigator programs. Both grants aid in providing funding and mentorship for early-career CT surgeons. Although conceptually, these programs would enhance the recipients' career in academic medicine, this has not been quantified to date. As such, in this study we aimed to examine the scholastic and career effect of receiving either grant from the AATS Foundation.

METHODS

Awardee Population

The AATS annual reports were searched to generate recipients for the AATS research scholarship and surgical investigator awardees (Figure 1). The research scholarship recipients date back to 1986, whereas the surgical investigator awards date back to 2014. All recipients were included throughout the analysis with 2020 being the last year studied. However, in instances in which a portion of awardees would not be included in the analysis (eg, surgeons in Canada in an evaluation of National Institutes of Health [NIH] funding), the initial awardee number was adjusted to provide better estimates. This is detailed when it occurs. No internal review board approval was required because all acquired data were publicly available. The institutional review board waived the need for written informed consent for publication.

Analysis

Publications and citations were counted for each recipient in a 4-year window from the time of grant awarding (eg, award dates of 1986 would have a windows for 1986-1989). Similarly, citations and H-Index were counted throughout the awardee's career up to the present day. To measure

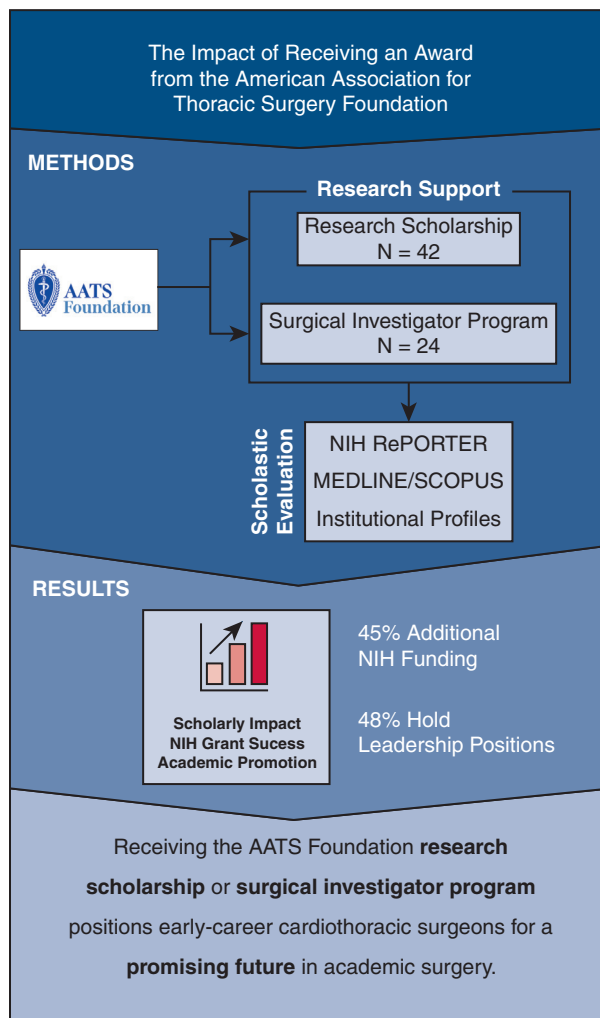


FIGURE 1. American Association for Thoracic Surgery (AATS) Foundation Research Scholarship and Surgical Investigator programs resulted in high scholarly output, increased National Institutes of Health (NIH) grant success rates, and academic promotions.

publications and citations, PubMed's MEDLINE was used. This is an index repository of all biomedical research, containing over 27 million references. SCOPUS was used to assess the current H-Index of all awardees. The H-Index is a measure of scholastic impact⁷ in which an H-Index of *h* means that an author has at least *h* publications, each with at least *h* citations. For example, an author with 5 articles with the following citations (100, 37, 12, 4, 1) would have an H index of 4, meaning that 4 of the author's articles have 4 citations or more. As the citations for the manuscript with 4 citations increases, so would the H-Index. SCOPUS is an extensive, linked database with over 80 million items that date back to the 1970s. This service collates author profiles and quickly calculates the current H-Index on the basis of their database.

Leadership and academic promotion were assessed via publicly accessible institutional profiles. Leadership was defined as an associate director or director of a clinical unit, as well as a division chief. CTSNet and department-specific profiles were used with the year of scholarship awarding to assess academic standing at that time. The highest level of academic standing available was used as the current promotion level for each awardee. Additionally, any mention of a directorship position or division chief on the current academic profile was recorded as a leadership position.

TABLE 1. Baseline characteristics of AATS grant programs

	Research scholarship (n = 42)	Surgical investigator program (n = 24)
Female sex	2 (4.8)	4 (16.7)
MD-PhD surgeons	9 (21.4)	2 (8.3)
Number of unique universities	27 (64.3)	19 (79.2)

Data are presented as n (%).

RESULTS

Throughout the AATS research scholarship award period, there were 42 recipients (Table 1). Awardees were more often male, with 4.8% being female. Almost a quarter (21.4%) were MD-PhD surgeons, and the recipients of this grant held faculty positions at 27 unique universities. The surgical investigator program has been awarded to 24 individuals, 16.7% of whom are women. A fewer number of surgeons (8.3%) were MD-PhDs, and 79.2% of awards went to unique institutions. All awards were well distributed throughout the years with a median of 1 award per year (interquartile range [IQR], 1-2) and 4 awards per year (IQR, 3-5) for the research scholarship and surgical investigator program, respectively.

Scholarly contributions were measured in a 4-year window from the time of the grant award and throughout the awardee’s career. In the 4-year window, the research scholarship had a median of 23 (IQR, 5-34) publications with a median of 364 (IQR, 56-563) citations (Table 2). There were 37 (IQR, 27-44) publications for the surgical investigator program with a median of 632 (IQR, 392-1306) citations. The research scholarship totaled a median of 4733 (IQR, 389-9050) citations with awardees having a median H-Index of 33 (IQR, 9-50) for the total career duration. There was a median of 1346 (430-2775) citations for the surgical investigator program with a median H-Index of 17 (IQR, 11-26). It is important to note that for the 4-year window for the research scholarship, SCOPUS does not keep records before 1992. As such, no 4-year window could be applied for the 3 earliest awardees. These were awarded in years 1986, 1988, and 1990.

More than half (54%) of the eligible research scholarship awardees secured subsequent NIH funding (Figure 2). Of

TABLE 2. Scholastic contributions

	Research scholarship (n = 42)	Surgical investigator program (n = 24)
4-Year window		
Publications	23 (5-34)	37 (27-44)
Citations	364 (56-563)	632 (392-1306)
Current		
Citations	4733 (389-9050)	1346 (430-2775)
H-Index	33 (9-50)	17 (11-26)

Data are presented as median (interquartile range, 1-3).

this group, 85% of grants were K, R, and P level NIH mechanisms (Table 3). These grants were awarded at a median time of 3 years from the AATS award date. For the surgical scholarship investigator program, 26% of eligible awardees secured NIH funding, all of which were K, R, and U level grants. These grants were awarded at a median of 2 years from the AATS grant awarding. Impressively, of all awardees of either AATS funding, who secured 1 NIH grant, 88% continued to secure at least 1 additional NIH grant, and 76% secured at least 2 more NIH grants or have current NIH funding. It is important to note that recipients of these grants might not have a faculty position in the United States and would be ineligible to apply for NIH funding because it is only for US institutions. There were 9 individuals in the research scholarship and 5 individuals in the surgical investigator award categories. These individuals were omitted from this analysis.

Across both cohorts the median time to receive a K award was 1 year (IQR, 0-2) whereas the median time to receive an R award was 3 years (IQR, 1.75-3.5). Of all 8 K awards, 2 were still ongoing at the time of this analysis whereas the other 6 had received additional funding.

Most (71%) awardees were academically promoted (Figure 3). More than 90% of the research scholarship awardees were an assistant professor at the time of awarding, with 89% of awardees being academically promoted—most to the level of full professor. Half of the surgical investigator awardees received an academic promotion, with most to an associate professor. It is important to note that some awardees hold positions at nonacademic institutions and did not have an academic rank. This occurred for 5 individuals, and they were excluded from this analysis. Approximately half (48.5%) of all awardees currently hold leadership positions (Figure 4). These positions only included associate and full directors (eg, associate director of heart failure) as well as division chiefs. Most (48%) promotions of recipients of either AATS grant were to clinical directorships or division chief.

DISCUSSION

The AATS promotes surgical leaders’ development through its foundation arm. The AATS Foundation has 2 primary funding mechanisms: the research scholar and surgical investigator programs. Through analyzing the scholastic and career effect of receiving either of these awards, we show 3 direct effects. First, there is a substantial contribution to research via numerous publications and citations, with awardees having impressive H-Indexes. Second, a high rate of subsequent NIH grant awarding extends beyond the first NIH grant. Last, most awardees have been academically promoted, and approximately half hold institutional leadership positions. Recipients of either AATS funding mechanism are well positioned for advancement in their academic careers.

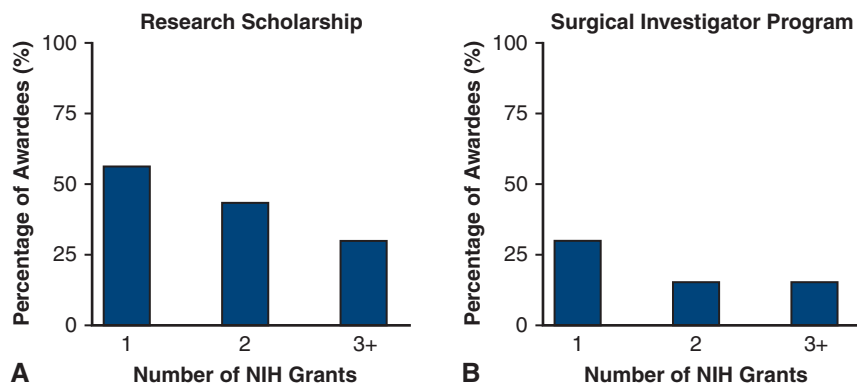


FIGURE 2. Percentage of eligible (A) research scholarship and (B) surgical investigator program awardees securing subsequent National Institutes of Health (NIH) grants.

It must be emphasized that comparisons between the research scholarship and the surgical investigator program would be inappropriate because of the longevity of each grant and its intended purpose. First, the research scholarship started in 1986 compared with the surgical investigator award, which started in 2014. The citations and H-Index would be naturally higher in the program that started longer, because these metrics can be heavily influenced by time. Moreover, publishing trends have shifted over time, with a surge in publishing options and increased ease of access.⁸ This would afford an advantage to more contemporary publications. Second, the research scholarship focuses on basic science, whereas the surgical investigator program promotes clinical and translational research. Both are vital to the overall advancement of CT surgery but have different publishing hurdles, with more time typically required for basic research.⁹⁻¹¹ Irrespective of these differences, it is clear the AATS Foundation has considered that both areas of research are vital to CT surgeons and, through their grant mechanisms, have generated substantial scholastic outflow.

TABLE 3. Initial NIH grant awards

Grant type	Research scholarship (N = 42)	Surgical investigator award (N = 24)
Total grants (1 per person)	20	5
R01	8 (45)	1 (20)
R21	2 (10)	1 (20)
K07	0 (0)	1 (20)
K08	6 (30)	1 (20)
P51	1 (5)	0 (0)
M01	1 (5)	0 (0)
Z01	1 (5)	0 (0)
I01	1 (5)	0 (0)
UM1	0 (0)	1 (20)

Data are presented as n or n (%).

Across both funding mechanisms, there was a low representation of female awardees. This is likely not a reflection of any bias in selecting awardees but rather a representation of the changing demographic characteristics of CT surgeons. In 2010, the thoracic surgery task force reported that 4.6% of practicing CT surgeons were female¹²; this distribution mirrors the demographic characteristics of top-ranked US institutions.¹³ Although it is positive that the rates of women AATS Foundation awardees (4.6%) match and exceed this representation for the research scholarship and surgical investigator program, the story is more promising. Under the auspices of the Women in Thoracic Surgery association, a report by Donington and colleagues¹⁴ revealed an exponential growth in board-certified CT surgery women, with more than half becoming certified in the past decade. Moreover, a 2014 report showed that 24% of integrated CT surgery residents were women.¹⁵ There is a clear shift for increased representation of women in CT training, which is reflected in the higher representation of women awardees in the surgical training program. It has a much later inception compared with the AATS Foundations grants. It is vital to ensure women’s participation because it affords leadership positions and, with it, necessary mentoring^{16,17} for the increasing population of women CT surgical residents and female medical students interested in a CT surgery career.

One of the main challenges in analyzing the effect of these grants is a good comparison group. Although an obvious control group would comprise early career surgeons who applied for these AATS grants but were not awarded; this information is not public and likely to be kept confidential. However, one reasonable comparison that can be made is on the grant success rates in the grant awardees against all researchers’ general success rates. The National Heart, Lung, and Blood Institute (NHLBI) is likely the primary institution to which most CT surgeons will apply for numerous reasons. First, the NHLBI covers the organs on which CT surgeons operate. Moreover, the NHLBI has a record of fostering research endeavors through its previous

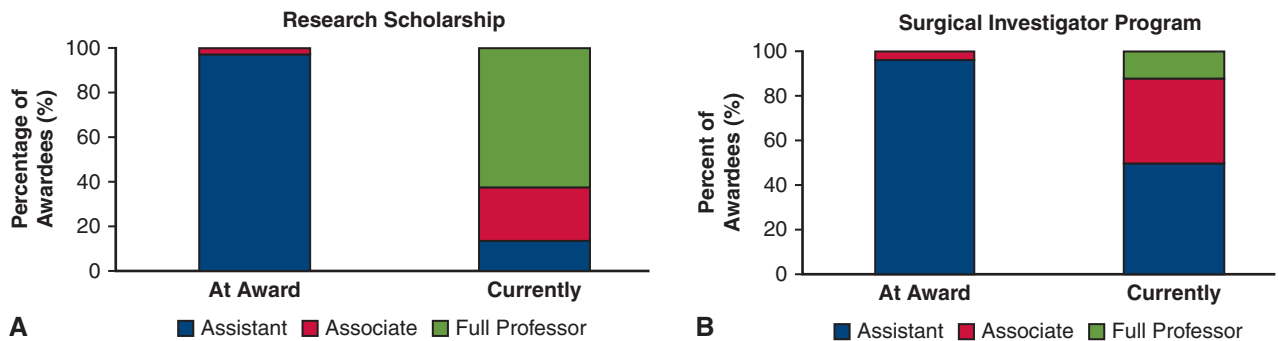


FIGURE 3. Academic Promotions for (A) research scholarship and (B) surgical investigator program awardees at award time and currently.

cardiac surgery branch, funded T32 positions,¹⁸ and joint events with CT professional bodies.¹⁹ The NHLBI reported funding rates of 22.2% for direct research project grants (eg, R01, R21, U01, P01) and 48.9% for K08 awards for the 2020 fiscal year.²⁰ Because only 30% of the first NIH grants were K08 awards for the research scholarship, it does not account for most grants that contribute to the overall high grant success rate. Moreover, the overall 46% grant success rate across both AATS funding mechanics is encouraging considering NIH success rates as low as 14% across the NIH for CT surgery research⁵ and 16.4% for all surgeon applications.²¹ Another helpful comparison is with a sister grant of the AATS Foundation grants, the Society of Thoracic Surgeons Thoracic Surgery Foundation (TSF) grant. In a recent analysis of Thoracic Surgery Foundation awardees, more than 40% secured NIH funding after the grant, comparable with the success rate of the foundation grants.²² Overall, the awarding of these grants and the subsequent mentorship has the potential to significantly enhance subsequent NIH grant-securing. Early research and mentorship in academic surgery are vital for nurturing the next generation of CT surgical leaders.^{23,24}

Despite this, there is still a narrative that it is exceedingly difficult to combine surgical excellence with basic or translational research. This narrative is apparent in the MD-PhD programs, whose charge from the NIH is to develop the next generation of physician scientists.²⁵ In a recent report on MD-PhD program outcomes, internal medicine and pathology had the largest number of students, with 26.1%

and 13.6%, respectively, with all surgery comprising 7%.²⁶ Moreover, only 16% of those in general surgery reported at least 50% research effort, compared with 10% in orthopedic surgery and 53% in medicine. This narrative shows that those who decide early on that research is a vital part of their medical practice are much less likely to choose surgery compared with internal medicine or pathology. Of those who do, limited time is devoted to research. Moreover, there is an often-quoted 80/20 or 90/10 split between research and clinical practice as the ideal for physician scientists.^{26,27} It is unlikely that a surgeon will maintain surgical excellence devoting a day a week to surgery. It is important to note, however, that a recent change in NIH policy allows 50% effort (from 75% effort) for surgeons on a K award. Holding these 2 notions in mind, trainees likely believe a choice between the two is necessary.²⁸ However, as shown herein, this is not the case—the narrative needs to change. Although no doubt challenging, pursuing surgery and science is attainable,²² especially through programs such as the AATS Foundation, which looks toward our field’s future and creates highly effective programs to foster the next generation.

Limitation

There are several limitations to this study. The primary limitation is the lack of a robust comparison group. There is not a list of unsuccessful applicants for this award, resulting in imprecise comparisons of the scholastic and career effects of the award. Using a 4-year window from the AATS

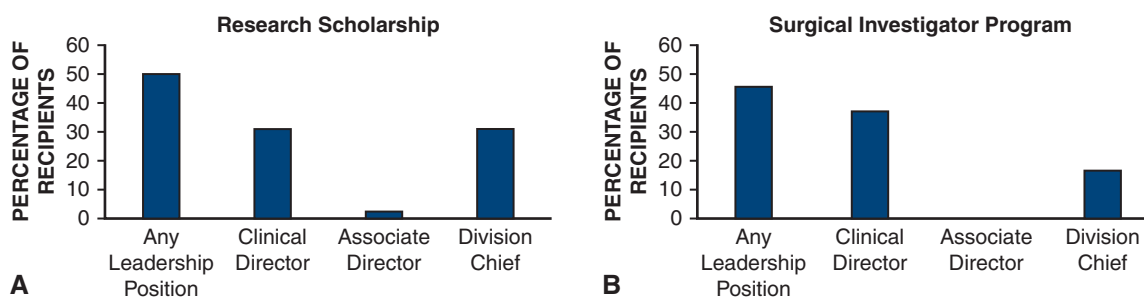


FIGURE 4. Leadership positions for eligible (A) Research Scholarship and (B) Surgical Investigator Program awardees holding any leadership position and the position breakdown.

grant-awarding time could include publications and citations not directly affiliated with the AATS grant, resulting in an overestimate. However, there are likely positive side effects from receiving these grants, such as the environment and mentorship, and existence of financial support, which can indirectly enhance overall research productivity. Additionally, robust data on time from training was not ubiquitous across trainees. This could bias results because trainees further out from training might have advantages in securing grants. Likewise, there were no robust data on promotions, which could give bias toward trainees further out from their award. Second, only the NIH RePorter tool was used to assess subsequent grant funding. This would omit grants from other institutions such as the Department of Defense, the American Heart Association, and private funding. Moreover, no data were available on NIH grant attempts, meaning that the percentage of respondents who received additional NIH funding might be larger if the number who applied for additional NIH funding was decreased. Additionally, the NIH RePorter tool underwent a system change that could cause some issues in data accuracy because of data merging and linking publications with author name. Last, MEDLINE and SCOPUS might have incomplete publication association with awardees, particularly if any name change occurred, which would give errors in the publication and citation count and possibly in the H-Index.

CONCLUSIONS

The AATS Foundation's research scholarship and surgical investigator program accomplish the goal of the AATS—to grow the next generation of CT surgical leaders. These funding mechanics accomplish this by resulting in significant scholastic contributions, high H-Indexes, substantial NIH grant-securing, and placement in leadership positions. Medical students and young trainees should not be discouraged from pursuing research with surgery. Receiving these grants positions awardees' careers for a bright future in academic surgery with considerable research integration.

Webcast

You can watch a Webcast of this AATS meeting presentation by going to: https://aats.blob.core.windows.net/media/21%20AM/Day3_LiveEdited/AM21_A58%20-%20The%20Impact%20of%20Receiving%20an%20Award%20from%20the%20AATS%20Foundation_Spirit%20and%20Legacy%20of%20Innovation.mp4.



Conflict of Interest Statement

The authors reported no conflicts of interest.

The *Journal* policy requires editors and reviewers to disclose conflicts of interest and to decline handling or reviewing manuscripts for which they may have a conflict of interest. The editors and reviewers of this article have no conflicts of interest.

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Key Words: AATS Foundation, academic promotion, surgeon-scientists

Discussion

Presenter: Dr Edgar Aranda-Michel



Dr Mehmet C. Oz (*New York, NY*). Dr Aranda-Michel, you did a wonderful job. As someone who received a Gross award in a year of bygone and has been involved in sponsoring some of the more recent research rewards, I'm curious about the difference between the 2 camps and whether those differences are a phenomenon of time or are there other substantive differences in how these candidates are selected that shift them—either more academically or more influenced by manuscript crafting? Especially influential manuscripts as you outlined.

If you can think about that question, let me just give an overall preamble to my comments. I am stunned at how impressive these results are. Many of us who've been involved in the AATS from the beginning of our careers hope that there would be some evidence that these grants made sense. It intuitively was sensible that by offering mentoring, which is primarily what these represent, that it would be an effort for senior members of society to mentor younger members. The money is important because it carves out time, but that's just an improvement to equality. It reflects what societies should always be doing.

I see in my own career how influential my mentors were. Gerald Lemole, Eric Rose, Craig Smith at Columbia, and many others who have either trained me or were in other ways were responsible for nudging me along in the right direction. I think these cardiothoracic surgeons treasure these types of awards because it's part of our heritage and are invaluable. I suspect these data would be applicable to other societies as well. You touched on the fact we didn't capture those but if we were able to capture them, I suspect we would find favorable results as you've indicated. And again,

it highlights the responsibility we have as members of a civic society to go beyond where we often draw lines.

Most of us as doctors are very comfortable saying that we have a responsibility to our patients—that's the Hippocratic oath. We have a responsibility to police each other and make sure that we're doing the right thing. We have a responsibility to build on the advances made by our forefathers, which is what the AATS represents. We also have a civic responsibility to speak out on issues that matter to this community. And I think by giving scholarship awards or research awards you're encouraging people to go beyond the ivory towers that we are trained in and allow that wisdom to spill over to the broader community.

So, let's start with my first question about the difference between the 2 awards and then the numbers that you allude to. Do you think they're real or do they need more time?



Dr Edgar Aranda-Michel (*Pittsburg, Penn*). Thank you very much for the first question. Yes, I think it's definitely a combination of 2 things. First and foremost, the timing does matter a lot. Because we're looking at both scholarships in aggregate, obviously the foundation scholarship which started much

earlier has more run time, which means that more papers exist for longer periods of time and certainly more citations are generated from those. Whereas the Surgical Investigator started only 7 years ago, so it has a much shorter time. Despite that, when looking at these 4-year windows there was a slightly higher citation count in the Surgical Investigator awards, and I think perhaps that has to do with the style of research that's being encouraged by these grants.

Whereas the research scholarship, at least from the description and looking at some of the projects, has more of a focus on basic science, which could perhaps take longer to do—especially in today's day and age where these papers can take multitudes of years to get a finished product out there. But clinical and translational progress might be a bit quicker and might reach a wider audience faster. So that could explain some of the other discrepancies or differences between the 2 funding mechanisms.

Dr Oz. You mentioned the percentage of recipients who are female. Does that match the overall membership with the AATS or residents coming into cardiothoracic training now? And could you also address other ethnic groups which are not mentioned, specifically Black American physicians? I mention that because we have a program called #More-BlackDoctors which is sought in part—especially during COVID—to get more Black position leaders involved because they can speak in communities where they'll have tremendous impact. I'm just curious if we're focusing on those issues as well.

Dr Aranda-Michel. Thank you very much for the questions. For the first question, regarding the female

proportion, I think there is perhaps a bit of a lag time. Because the Scholarship Foundation started so early on in 1985, women representation in surgery and in cardiothoracic surgery was rather limited. Whereas when we look at the percentage of women in the Surgical Investigator program that is a much higher percentage. I believe around 5 to 10 percent of the cardiothoracic workforce is female, but in looking at the residency I think it's closer to about 40 or 50 percent. So, I think that's a promising indication that the trend is moving toward more women involvement in cardiothoracic surgery. And then ideally, this will be reflected in those receiving these foundation grants to really become the next generation of surgical leaders.

Regarding the second point for ethnicities, we unfortunately weren't able to look at ethnicities for these surgeons because that's not publicly available information and we would have to get an IRB approval for a survey to be sent out to ask these recipients how they identify their ethnicity. But I think this is a very crucial point, as you pointed out, and there's been further research to support that patient-physician inter-relationships with similar ethnicities produce better results. So, I think it's definitely an area that warrants much further investigation.

Dr Oz. Since you've studied this area as well as anybody, what would you suggest to the leadership of the AATS and the members about this program and turbocharging it? What can we do to allow it to work even better? Where are the misses?

Dr Aranda-Michel. I think this is a very critical question especially looking long-term. And I think we have to think of the academic and scientific world as a whole and I think most people will see that in today's day and age it's becoming increasingly more complex and interconnected. The AATS scholarships are doing a good job of allowing individual surgeons to progress research that they're very passionate about and, as you said, to prepare them with mentors that share similar research interests, that are established, and who can show them the ropes to help them progress as surgery leaders. The AATS Foundation is definitely doing its mission in that regard.

I think perhaps one area where it could really benefit is to encourage cross-collaboration, either between members in the AATS or institutions, to allow leveraging of distinct and diverse skill sets to try and address very complicated

questions in medicine. And by having mechanisms in place to encourage these cross-collaborations would likely further enhance the AATS effects of the foundation.

Dr Oz. I think your abstract would serve as a wonderful mechanism to build those collaborations. When we show our data, many societies won't have similar data, but it will allow us to interface with a bit more credibility.

Last question and hardest question. Do you have controlled data? What about the people who applied and didn't get the grants, how do they do? And I know there's obviously a difference in the fact of getting the grant versus not getting the grant. I'm just curious, what happens to the average member of our society with regard to publishing manuscripts, scores, NIH grants, and professorship promotion?

Dr Aranda-Michel. Thank you for the question. I think, as you very aptly described, this is probably the hardest question and the hardest quantity to quantify in this style of research.

Unfortunately, right now, we don't have a good control group for it. I think the best control group, as you stated, are members who applied for the foundation scholarship and didn't get it or just an AATS member and what their scholastic contribution look like. But unfortunately, the members who applied and didn't get it, that's not necessarily publicly available information, but perhaps it's more attainable to look at all members in AATS based in America to see what the results are.

One comparison we can make is that looking at the NIH grant award rates and comparing them with the overall award rates. So, typical R01 award rates for the Heart, Lung, and Blood Institute, which would be the institute that a lot of CT surgeon would likely be applying to, it's about a 23 to 24 percent acceptance rate for all comers. For R21s it's a 16 percent rate. So, these are quite low percentage rates. Whereas here, although there was an array of various grant funding mechanisms that were awarded, still the rate of securing these by members is higher than what we're seeing overall with the NIH.

Dr Oz. Congratulations. Very well done. I'm proud to be a member of a society that can track this information. Thank you for making it possible.

Dr Aranda-Michel. Thank you very much, Dr Oz.