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Analyzing the cost of ophthalmology research conference attendance by medical students in the United States

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Abstract

Purpose: To analyze the average cost of attending ophthalmology research conferences as a medical student and to describe available funding opportunities.
Methods: Data from national ophthalmology conferences in the United States from August 2023 to August 2024 were gathered using publicly available records. Collected variables included conference registration cost, discounted conference hotel rates, and conference funding opportunities for medical students. Costs for average airfare, ground transportation, and meals for each conference were also calculated.
Results: A total of 22 conferences met the inclusion criteria. The average total cost of attendance per conference was US$1,399.31, which included student registration fees, discounted conference hotel fare, airfare, ground transportation, and meal expenses. Five (22.7%) conferences offered free registration for all medical students. Registration fees ranged from US$75 to US$580, with an average cost of US$230.45. Seven conferences (31.8 %) offered at least 1 medical student conference travel grant, ranging from US$200 to US$2,000 per recipient. The average total cost of attendance for the 7 conferences with available grants was US$370.23 per conference, which was 74% less expensive than the average cost per conference in the cohort without student funding.

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Conclusions: Research conferences present valuable opportunities for medical students. Conference attendance is costly, and expensive registration fees introduce a potential barrier to career advancement for prospective ophthalmologists, especially for students from low-income and minority backgrounds. It is important for the field of ophthalmology to promote inclusion and increase opportunities for trainees. Increased funding for students, discounted fees, and virtual attendance options are potential solutions for improving access to ophthalmology research events.

Keywords: conferences, medical student, ophthalmology residency, research, residency application

Introduction

Ophthalmology research conferences provide an academic environment for medical students to network with mentors, exchange educational ideas, and strengthen their research presentation skills. A Texas STAR database survey of 490 matched ophthalmology applicants into a United States residency program between 2021 and 2024 found their average number of abstracts, posters, and presentations to be 7.45.[1]

In recent years, there has been an increase in research participation of prospective United States ophthalmology residency applicants.[2] This could be in part due to an increased number of applicants or because the United States Medical Licensing Exam (USMLE) Step 1 has transitioned to a pass/fail grading system.[2] A recent survey of 873 residency program directors across all specialties revealed 41% felt medical student research participation is more important for offering residency interviews now that the USMLE Step 1 is pass/fail.[3] Moreover, a survey of 852 medical students demonstrated 59.6% of respondents planned to dedicate more time toward conducting research because of the change in the USMLE Step 1 to pass/fail grading.[4] Research is also important for international medical graduates (IMGs) applying into ophthalmology, with 1 study finding that having United States research experience was associated with a 3-fold adjusted odds of matching as an IMG.[5]

Despite the benefits of medical students presenting at ophthalmology research conferences, conference participation is costly. This may act as a barrier for student conference participation. Currently, no studies exist in the literature concerning the cost of ophthalmology conferences for medical students. The present study aims to determine the average expenses incurred by United States medical students attending ophthalmology research conferences and examine potential conference funding opportunities.

Methods

A list of academic ophthalmology conferences in the United States from August 2023 to August 2024 was compiled using publicly available online records. A search was conducted on the American Academy of Ophthalmology "Meetings" webpage, the Healio "Ophthalmology Meeting Calendar" webpage, and Google search engine utilizing the top 100 query results for "ophthalmology conference", "ophthalmology meeting", "eye conference", and "ophthalmology medical student conference".

Inclusion criteria included (1) ophthalmology conferences that were open to medical student abstract submission, (2) were held in the United States, and (3) took place between August 2023 and August 2024. Exclusion criteria were (1) conferences that were held outside of the United States, (2) university, state, or local meetings that did not allow outside abstract submission, and (3) conferences not specifically related to ophthalmology.

Individual conference websites were searched to collect conference dates, location, registration cost, discounted hotel rates, and scholarship or grant funding opportunities. For registration cost, the fee most applicable to a medical student was recorded (*i.e.*, "member in training" or "nonmember"). Additionally, if there was an "early bird" discount available, this was the registration price used in our analysis. For hotel cost, the least expensive hotel room discounted through the conference was recorded, with applicable taxes and fees added on. Airfare expenses were obtained from the United States Bureau of Transportation average annual domestic flight fare statistical report for each conference's city location.[6] For each location, the inflation-adjusted average fare was used under the 2023 annual average flight cost. Average ground transportation cost was recorded from the Uber™ website's estimated average cost of an Uber™ X ride from the city's airport to the conference hotel.[7] The estimated average Uber™ X cost from the conference hotel to the city's airport was also recorded. Meal expenses were estimated at US$45 per day, or US$15 per meal. Costs of hotels and meals were calculated for a 3-day and 2-night stay.

Each conference website was also searched for funding opportunities that expensed any part of medical student conference attendance (*i.e.*, registration, hotel, airfare expenses). The dollar amount of each grant and its selection criteria were recorded. The average cost of conference attendance including applicable travel grants was also included. This was calculated by subtracting the conference grant amount from the total cost starting with hotels, airfare, transportation, and finally, meal cost.

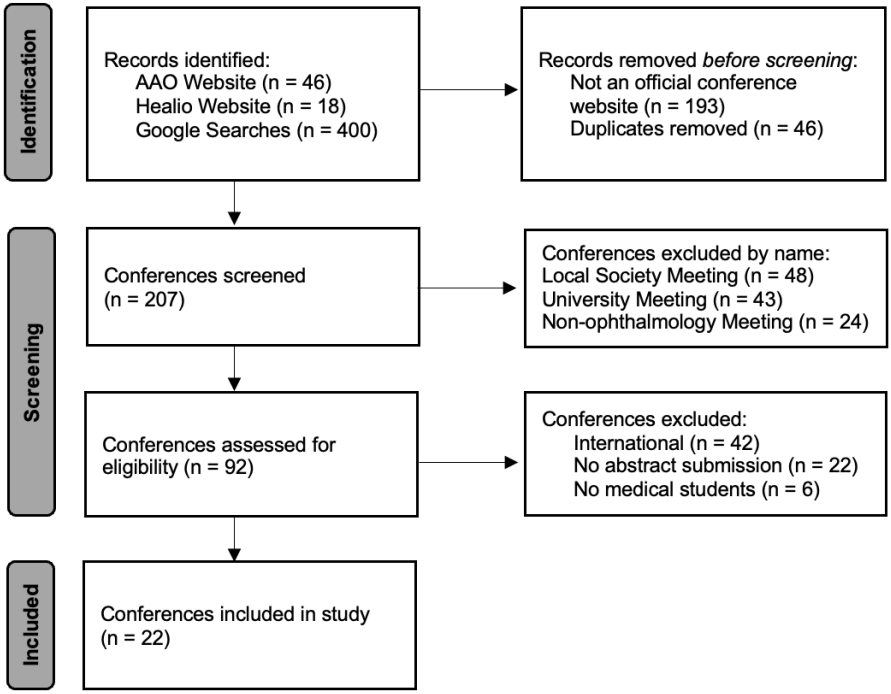

Fig. 1. Study search flow diagram.

Results

Average cost

Our search yielded 464 total webpages (Fig. 1). In total, 22 conferences met inclusion criteria and were analyzed in the study. The average total cost of attendance per conference was US$1,399.31 (Table 1). The average registration fee of all 22 conferences was US$230.45 (Table 2). Seventeen (77.3%) conferences collected a medical student registration fee, ranging from US$75 to US$580 (Table 3). The average total discounted hotel cost for all conferences was US$603.66, which included a 2-night stay for 19 conferences that were multi-day meetings and a 1-night stay for 3 conferences that took place on a single day. The average airfare cost for all conferences was US$370.03.

Table 1. Average medical student ophthalmology conference attendance costs in 2023–2024 with and without medical student conference funding

	n	Registration	Hotel	Airfare	Transportation	Meals	Total
Without funding	22	US$230.45	US$603.66	US$370.03	US$76.53	US$118.64	US$1399.31
With funding	7	US$124.29	US$3.88	US$111.53	US$27.71	US$102.82	US$370.23

Table 2. Average total cost breakdown per conference for medical student attendance

Average total cost	Number of conferences
US$400–600	1
US$601–800	0
US$801–1000	2
US$1001–1200	3
US$1201–1400	3
US$1401–1600	7
US$1601–1800	5
US$1801–2000	0
US$2001–2200	1

Table 3. Average registration cost breakdown per conference for medical students

Registration cost	Number of conferences
US$0	5
US$1–100	3
US$101–200	3
US$201–300	2
US$301–400	6
US$401–500	1
US$501–600	2

Travel grants and conference funding

Of the 22 included conferences, 5 (22.7%) offered free conference registration for all medical students, and 7 (31.8%) advertised at least 1 grant available for partial or full medical student reimbursement. Of the 7 grants, 4 (57.1%) awards could be used toward registration cost and travel/accommodations and 3 (42.9%) awards could be used for travel/accommodations only. Award amounts ranged from US$200 to US$2,000 per recipient. Two (28.6%) of the grants were awarded to students underrepresented in medicine (URiM). The remaining grants were awarded based on high-scoring conference abstracts or to students demonstrating a strong commitment to ophthalmology.

Seven (31.8%) conferences offered grant opportunities for medical students. The average total cost of discounted attendance was US$370.23 among the 7 conferences (Table 1). This average cost was 74% less expensive than the average cost per conference without student funding (US$370.23 versus US$1,399.31). This included an average registration fee of US$124.29 (versus US$230.45 without discount). Of the 7 conference grants offered to medical students, 6 (85.7%) awards covered the entirety of hotel expenses, 4 (57.1%) awards covered registration, airfare, and ground transportation costs, and 1 (14.2%) award covered all meal expenses.

Discussion

These findings emphasize the financial burden medical students in the United States sustain when attending ophthalmology conferences. Meaningful medical student research participation, including research presentations at conferences, is valuable for making connections in ophthalmology and strengthening a student's curriculum vitae. Additionally, presenting research serves as an excellent introduction to academic medicine.

Although official ophthalmology residency match statistics do not quantify medical student research output, studies indicate that conducting research is a key part of many ophthalmology residency applications. One retrospective study of the United States ophthalmology residency match from 2013 to 2015 found 99% of matched applicants participated in research.[8] The average number of research publications for matched ophthalmology applicants was 1.23 ± 0.01 in 340 matched applicants in the 2015 match and 2.4 ± 3.1 in 393 matched applicants in the 2021 match.[9,10] Interestingly, a recent study focused on IMGs determined that 23 IMG students who matched into United States ophthalmology residency programs in 2022 and 2023 had an average of 19.1 publications on PubMed.[11] This high number of research publications may indicate a higher importance of ophthalmology conference participation for IMGs matching into ophthalmology, although further research on IMG conference involvement is required.

Barriers to conference attendance

These conference attendance costs introduce a potential barrier to career advancement for prospective ophthalmologists. The results of this study indicate that on average a medical student would need to spend more than US$1,500 to attend 1 ophthalmology conference. Moreover, these costs represent an immense disadvantage for students from low-income and minority backgrounds. Approximately 21% of matriculating medical students come from low-income households.[12] Scholarships designed to lessen the financial burden for students URiM exist; however, they remain scarce as evidenced by the 2 grant opportunities identified in our search. Additionally, these costs are extracurricular and take place in the context of already expansive medical student debt. The median amount of medical student debt in 2019 reported by the American Medical Association was US$200,000, with 73% of students graduating with educational debt.[13] Furthermore, they reported that 91% of medical graduates who identified as Black and 84% of those who identified as Hispanic graduated with educational debt in 2019.[13]

Medical students without an ophthalmology department at their home institution may be at a disadvantage in garnering research opportunities and presenting at ophthalmology research conferences. Of the 22 conferences analyzed in this study, 4 conferences required sponsorship from an attending physician with a specific society membership, which could act as a barrier for students without a home department.

Conference awards and funding

For students, there is a large difference between the average cost of attending an unfunded conference (US$1399.31) and the average cost of attending a funded conference (US$370.23). One solution towards mending this disparity is a call for more grants and resources allocated to medical students. Some conferences are already addressing attendance costs with free or discounted conference registration options for medical students. Another potential solution for increasing access to research conferences is to subsidize travel expenses or expand virtual attendance options.

Additionally, students interested in ophthalmology would benefit from increased research mentorship programs geared towards student career development. For example, the Minority Ophthalmology Mentoring program provides one-on-one ophthalmology mentoring for students who are URiM. Initiatives such as this provide dedicated time for mentorship, research funding, and can help connect students with additional scholarship opportunities.

Limitations

Study limitations include an inability to account for variability in medical student travel and schedules. Considerations include shared housing accommodations among peers and the ability to drive to certain conferences as opposed to flying. We aimed to determine the estimated maximum cost for a medical student attending a 3-day and 2-night conference on their own; however, some students may be able to attend a conference for more or less than 3 days. Airfare, ground transportation, and meal expenses were calculated from estimated averages and are not exact. For example, the United States Bureau of Transportation flight cost averages are cumulative predictions based on annual data and may underestimate roundtrip flight costs. The results of our analysis are not generalizable to medical students who reside outside of the United States due to expectedly higher airfare costs incurred by IMGs. The study does not account for internal funding sources from institutional grants, laboratories, or individual medical school sponsorship. Additionally, it is possible that certain funding sources not publicly advertised were missed.

Conclusions

Attending ophthalmology research conferences benefits medical students. The cost of attending conferences can deter medical student participation. Increased advocacy for scholarship opportunities, discounted virtual conference options, and organizations willing to mentor student research is essential to improve access to research opportunities for students.

Declarations

Ethics approval and consent to participate
Not required.

Competing interests
None to declare.

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