



Impact of Resident-Led Small-Group Learning Sessions on Preclinical Students' Perceptions of Ophthalmology

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J Acad Ophthalmol 2021;13:e78–e81.

Abstract

Introduction Resident physicians have a significant role in the education of medical students, and limited research has demonstrated that positive interactions with residents are linked with enhanced students' perceptions of a specialty. Minimal research on residents as teachers has been done in ophthalmology, and no research has examined the impact of residents as teachers on the perceptions of preclinical students. This is an important area of interest because ophthalmology conducts an early match. The competitiveness of the field increases the importance of early involvement in research and clinical activities. This study aimed to assess the role of a resident-led workshops as a vehicle for exposing preclinical students to ophthalmology.

Methods A 2-hour workshop on the Ophthalmology Clinical Skills was held at the University of Cincinnati College of Medicine in November 2018. The workshop was conducted by seven ophthalmology residents, and the learners were 15 first-year and 11 second-year medical students. The workshop format consisted of a 30-minute introductory lecture on the field of ophthalmology, followed by a 60-minute small-group clinical skills' session focusing on direct ophthalmoscopy and slit lamp examination. Preworkshop and postworkshop surveys were administered to the medical students, and Student's paired sample *t*-test was used to assess the differences in responses before and after the workshop.

Results Students' average interest in ophthalmology rose ($p=0.049$) as did their likeliness to approach a resident for career advice ($p=4.65 \times 10^{-6}$) and their likeliness to attend the Secrets of the Match Lunch talk, a yearly talk held by a student matched into ophthalmology ($p=0.002$).

Conclusion These results suggest that resident intervention can have a positive impact on preclinical students' perceptions of ophthalmology and may be a good educational strategy to foster their positive attitudes toward the field.

Keywords

- ▶ ophthalmology
- ▶ student
- ▶ workshop
- ▶ perceptions

Resident physicians assume considerable responsibility for the clinical education of medical students during the third and fourth years of medical school. Resident roles range from supervising students during patient interaction to providing

performance feedback and engaging in bedside teaching. Research suggests that quality interactions between residents and medical students increase medical students' perception of the quality of education.¹ Positive experiences

received
July 11, 2020
accepted after revision
December 15, 2020

DOI <https://doi.org/10.1055/s-0040-1722742>.
ISSN 2475-4757.

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with resident physicians as teachers have been associated with clerkship satisfaction.¹

Furthermore, effective resident–student interaction has been noted to influence medical students' career decisions.² For example, longitudinal studies of surgery clerkships suggest that medical students exposed to surgical residents who were good clinical teachers and role models were more likely to pursue a surgical residency than students who worked with less-effective residents.² Work by Whittaker et al suggests that students often consider residents (rather than attending physicians) as their primary teachers.³

In addition to clerkships, another avenue through which residents can engage medical students is through small-group skills' sessions. Clinical skills' sessions may be appropriate for medical students at various stages, whereas clerkships are limited to medical students in their third and fourth years. Quillen and Cantore have shown that clinical skills' workshops improve medical students' knowledge and examination skills.⁴ However, this work does not examine the impact of such workshops on medical students' attitudes toward ophthalmology.

Our Study

To our knowledge, no published research has been done on the effects of resident intervention on preclinical students' perceptions of ophthalmology during the medical school years. Engagement of preclinical students is an important objective. Ophthalmology is a competitive field; average board examination scores of incoming ophthalmology residents exceed the national average. Furthermore, applications to ophthalmology residency programs are due earlier than applications for most other medical specialty residencies in the United States. This earlier timeline increases the significance of exposing medical students to ophthalmology early in their education. This may allow students to seek ophthalmology clinical and research opportunities, solidifying their interests and building a robust application for residency. The curriculum of many medical schools focuses on classroom instruction during the first 2 years and only allows for limited exposure to clinical practice. Additionally, many students do not get exposure to ophthalmology during the clinical years; studies suggest that less than 18 to 30% of U.S. medical schools required an ophthalmology rotation.^{5,6}

The goal of our study was to evaluate the impact of a resident-led, hands-on ophthalmology small-group workshop on students' interest and perception of the field.

Methods

A 2-hour workshop on clinical skills was conducted in November 2018 at the Outpatient Clinic of Department of Ophthalmology, University of Cincinnati. The University of Cincinnati is a public, state-funded school in southwestern Ohio. The College of Medicine has a class size of approximately 170 students per year.

The workshop was designed by medical students who were members of the Ophthalmology Interest Group in collaboration

with ophthalmology resident physicians, specifically three postgraduate second year (PGY-2), two postgraduate third year (PGY-3), and two postgraduate fourth year (PGY-4) residents from the Department of Ophthalmology, University of Cincinnati. There were 26 student attendees; 15 were first year medical students and 11 were second year medical students. Participating students were self-selected via e-mails sent to the first and second year student bodies, and all students who responded were enrolled. The workshop commenced with an introductory lecture by a senior resident. The content of the lecture was a collaborative decision of the students in the Ophthalmology Interest Group and residents. Care was taken to emphasize information that would be relevant to preclinical students who are at the beginning of their careers and who have limited knowledge of the day-to-day practice of ophthalmology. The resident instructor outlined the role of ophthalmologists in health care delivery, the residency training process, and the importance of networking and mentoring for students interested in the field. Additionally, the resident instructor discussed a day in the life of an ophthalmology resident and included examples of eye pathologies encountered, and reasons for choosing a career in ophthalmology. Time was allotted for informal conversation, student questions, and resident answers.

The instructive portion of the workshop was standardized and consisted of a resident teaching groups with four to five students. The instructor covered basic skills related to direct ophthalmoscopy and slit lamp examination. Prior to beginning the clinical part of the workshop, the instructors taught students which structures, for example, the macula, optic nerve, retinal blood vessels and anterior chamber components, would be examined. These clinical ophthalmology skills were chosen based on evidence from work by Byrd et al,⁵ who determined that workshops centered on these skills led to increased student knowledge. Each student was given the opportunity to practice using the diagnostic instruments on resident instructors, each of whom had a single pupil dilated. Throughout the course of the clinical skills workshop, the resident instructors guided students on their examination technique, evaluating their skill, and offering feedback. The interactive format of the workshop allowed for residents to informally discuss the field of ophthalmology throughout the session.

To assess the impact of the workshop and of the residents' engagement, preworkshop and postworkshop surveys were administered to the students (►Table 1). The surveys were administered through an online survey link. Students were given a randomized ID number to match their preworkshop and postworkshop responses. Each survey question was answered via a Likert's scale of 1 through 5. Student's paired sample *t*-test was used to assess differences between responses given before and after the workshop. Two students did not respond; ultimately, responses from 24 students was analyzed.

Institutional review board (IRB) nonhumans study exemption status was granted in 2017 for this study by the University of Cincinnati Institutional Review Board. All patients were aware of potential participation in quality improvement research and consented to participation.

Table 1 Student survey

| Question | Answer choices | Mean score presurvey | Mean score postsurvey | Significance |
|---|----------------|----------------------|-----------------------|------------------------|
| Year | M1/M2 | | | |
| ID number | | | | |
| Rank your interest in ophthalmology (1 = not very interested, 5 = very interested) | 1/2/3/4/5 | 3.5 | 3.79 | 0.0498 |
| Rate how comfortable you are using a direct ophthalmoscope (1 = not very comfortable, 5 = very comfortable) | 1/2/3/4/5 | 2 | 2.91 | 0.000458 |
| Rate how comfortable you are using a slit lamp (1 = not very comfortable, 5 = very comfortable) | 1/2/3/4/5 | 1.42 | 3.08 | 1.303×10^{-7} |
| How likely are you to approach a resident for career advice/networking? (1 = not very likely, 5 = very likely) | 1/2/3/4/5 | 2.79 | 3.83 | 4.65×10^{-6} |
| How likely are you to take an ophthalmology clerkship? (1 = not very likely, 5 = very likely) | 1/2/3/4/5 | 3.79 | 3.95 | 0.218 |
| How likely are you to attend the Secrets of the Match Lunch Talk? (1 = not very likely, 5 = very likely) | 1/2/3/4/5 | 3.95 | 4.355 | 0.00247 |
| How interested would you be in receiving career advice specific to preparing for a possible career in ophthalmology, from a medical school upperclassman or resident? (1 = not very interested 5 = very interested) | 1/2/3/4/5 | 4.167 | 4.167 | 1 |

Abbreviations: M1, first year medical student; M2, second year medical student.

Results

The score for average interest in ophthalmology rose significantly after the workshop ($p = 0.049$; ►Table 1). The average level of comfort using a direct ophthalmoscope rose significantly ($p = 0.0046$; ►Table 1) as did the average level of comfort using a slit lamp ($p = 1.303 \times 10^{-7}$; ►Table 1). Importantly, when asked how likely they were to approach a resident for career advice/networking, students' average score rose significantly after the workshop ($p = 4.65 \times 10^{-6}$; ►Table 1). Students' likeliness to attend the Secrets of the Match Lunch Talk, a yearly talk held at the College of Medicine to discuss the Ophthalmology Match, increased as well ($p = 0.002$; ►Table 1).

Discussion

Beneficial resident–student interactions have been noted to positively impact clinical students' perceptions of certain surgical fields, such as obstetrics/gynecology.¹ Our study indicates that this may hold true for preclinical students in ophthalmology as well. During the small-group workshop, students had hands-on interaction with ophthalmological tools and were instructed directly by resident physicians. Furthermore, resident physicians spoke about their interests and experiences in the field, both to the group as a whole and to the students in small groups and individually. The fact that students' average interest in ophthalmology, likelihood to seek further information regarding the Ophthalmology Residency Match Process, and likelihood of approaching a resident physician for career advice rose significantly after the workshop affirms the positive effect of resident-led interventions on students' perceptions of the field.

Resident-led educational sessions may be an effective method of fostering student interest in the field of ophthalmology. The sparking of interest and encouragement of students to seek out further education in ophthalmology is important, given the early ophthalmology match and that the overall rate of required ophthalmology clinical rotations is falling nationwide.⁶ Studies show that ophthalmological educational experiences outside formal rotations are also limited. Due to the limited ophthalmology education opportunities in medical schools, medical students and primary care doctors may be inadequately trained to handle ophthalmic problems and lack proper understanding of ocular anatomy and eye examination skills. However, active medical student educational programs can improve students' knowledge levels.⁷ Moreover, Resident-led interventions could help encourage preclinical students to take the initiative in seeking out such learning opportunities in ophthalmology, which may help them further bolster their awareness and encourage them to engage in ophthalmology elective rotations.

Future direction for this work could explore the relationship between preclinical workshops and the role of resident near-peer mentoring of medical students. Our study supports the concept that clinical skills' workshops are a good vehicle for introducing students to the specialty of ophthalmology and an opportunity to meet mentors. Mentoring relationships are a valuable asset in many fields and have been associated with positive motivational and career outcomes and personal and professional growth.⁸ Mentors provide academic knowledge, as well as implicit knowledge pertaining to professionalism and ethics, emotional support, and encouragement.⁹ In previous research, medical student participation and training at extracurricular volunteer eye clinics facilitated their ophthalmoscopy skills and tonometer skills.⁵ Data from the current

study also support the notion that extracurricular workshops are helpful in teaching students about the field in a hands-on manner. The participation of residents as the exclusive teachers in these small-group workshops might be structured to serve as an important link between workshops and long-term influence on medical student career paths. Mentoring has been shown to be beneficial to students, particularly in regard to helping them understand the role of professional competence in physician identity. It has also been proposed that when students explore clinical realities with the mentor, they are motivated to increase their knowledge.¹⁰ Our study did not assess longitudinal resident–student mentoring relationship; however, it did demonstrate that students benefitted from interactions with residents in a small-group environment. Therefore, it is possible that small-group workshops, such as ours, may be a good springboard for the development of longer term mentoring relationships.

Conclusion

Our study supports that resident-led workshops for medical students serve as a good educational strategy for increasing preclinical medical student interest in ophthalmology. Resident-led ophthalmology clinical skills workshops are efficacious methods of introducing preclinical students to the field and of positively impacting their perceptions of ophthalmology. This type of small-group workshop may serve as a platform for facilitating positive resident–student interaction during the early years of medical school education and also serve as an extracurricular strategy for introducing students to potential resident mentors.

Conflict of Interest

None declared.

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