

Evaluating Resident Education Practices in Endoscopic Sinus Surgery

Ear, Nose & Throat Journal

1–3

© The Author(s) 2024

Article reuse guidelines:

sagepub.com/journals-permissions

DOI: 10.1177/01455613241288457

journals.sagepub.com/home/ear



Rose Dimitroyannis, BA¹ , Dennis M. Tang, MD², Matthew K. Lee, MD², and Christopher R. Roxbury, MD³

Though there is a lack of literature regarding resident education in endoscopic sinus surgery (ESS), research suggests widespread model-based training.¹ This study evaluates current education practices with otolaryngology residents learning to perform ESS. It aims to improve otolaryngology resident training methods by examining what otolaryngology residency program directors (PDs) see as effective practices. With this data, we hope to continue improving education opportunities for residents training in ESS.

An anonymous 30-question cross-sectional survey was created within REDCap and distributed by email to 128 Otolaryngology program coordinators nationally from 7/18/22 to 8/18/22 and 3/15/2023 to 7/30/2023 with 6 reminders. Program coordinators were instructed to send the survey to affiliated PDs. The database of program coordinator emails was accessed from the Association of American Medical Colleges residency portal.

Initial questions assessed demographic information of the survey participant and the primary resident teaching method at their workplace. Using a 5-point Likert scale (one = strongly disagree, 5 = strongly agree), questions evaluated satisfaction with current education methods at their workplace for residents training in ESS and the effectiveness of different pedagogical approaches. The education methods were formal, informal, model-based, rubric-based, and “other.”^{2–5} Questions regarding feedback given to residents were categorized as verbal qualitative review, written qualitative review, personal grading scale, shared grading scale, and “other.” Using a 5-point Likert scale, further questions assessed the most effective feedback method.

Descriptive analysis of the data collected was conducted using R (R Core Team, Vienna, Austria).⁶ Differences between satisfaction and effectiveness of different education tools were measured using the Wilcoxon rank-sum test. Statistical significance was set at $P < .05$. The Institutional Review Board exempted this study at the University of Chicago, IRB22-1055.

We received 34 completed surveys for a response rate of 26.5%. Demographic information for surveyed participants is listed in Table 1.

The most common primary education method for ESS was informal instruction (52.9%).

Comparing Likert scores for the effectiveness of standard forms of education, simulation and informal training received the highest median, 4 (agree). In contrast, rubrics and formal instruction received median scores of 3 (neutral) and 3.5, respectively. The effectiveness of rubric methods was rated significantly lower than informal, formal, and simulation methods ($P < .001$, $P = .01$, and $P < .001$, respectively). A comparison is found in Figure 1.

Verbal qualitative feedback was most common, with 91.2% reporting this method, and had the highest effectiveness score of 4 (“agree”). Written qualitative review, personal grading system, and shared grading system received median scores of 3 (“neutral”). The effectiveness of verbal qualitative review was significantly higher than written qualitative, personal grading, and shared grading systems ($P = .04$, $P < .001$, $P < .001$, respectively).

Most PDs rated informal teaching and feedback methods as the primary way ESS is taught at their institution. The effectiveness of rubric methods was rated significantly lower than all other teaching methods. The effectiveness of verbal qualitative feedback was significantly higher than all other methods.

These data suggest that less structured pedagogy is favored. Informal learning environments may improve skill acquisition and knowledge retention.⁷ In addition, informal methods may be convenient as they don't

¹ Pritzker School of Medicine, University of Chicago, Chicago, IL, USA

² Department of Surgery, Section of Otolaryngology, Cedars-Sinai Medical Center, Los Angeles, CA, USA

³ Department of Surgery, Section of Otolaryngology, University of Chicago Medicine, Chicago, IL, USA

Christopher R. Roxbury is now affiliated to Staff, Section of Rhinology and Endoscopic Skull Base Surgery, Head and Neck Institute, Cleveland Clinic Foundation, Cleveland, OH, USA.

Received: August 31, 2024; revised: September 6, 2024; accepted: September 16, 2024

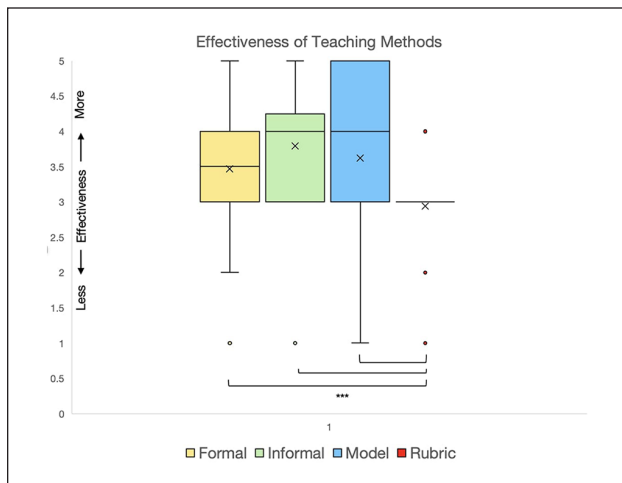
Corresponding Author:

Christopher R. Roxbury, MD, Section of Rhinology and Endoscopic Skull Base Surgery, Head and Neck Institute, Cleveland Clinic Foundation, 9500 Euclid Ave Cleveland, OH, 44195, USA.
Email: chrisroxbury@gmail.com



Table 1. Data Regarding the Demographic Information of Survey Participants.

Variable, n = 34	Frequency	Percentage
Gender		
Male	21	61.8
Female	12	35.3
Other	1	2.9
Race/ethnicity		
White or Caucasian	26	76.5
Asian or South Asian	5	14.7
Hispanic/Latinx	2	5.8
Native Hawaiian or other Pacific Islander	1	2.9
Institution location		
South	12	35.3
Northeast	12	35.3
Midwest	5	14.7
West	5	14.7

**Figure 1.** Boxplot comparing Likert scores for the effectiveness of training methods for endoscopic sinus surgery. "X" signifies mean, while the center line signifies median. *** $P \leq .01$.

require scheduling, funding for technology, or validated scoring systems. Research suggests that informal residency training helps emphasize holistic skills such as surgical ethics.³ ESS residency education commonly consists of frequent informal training with infrequent use of more structured techniques, such as simulation and formal lectures.

Though informal methods received high satisfaction and effectiveness ratings from PDs, current literature suggests residents may struggle with lack of guidance.⁸ Integrating new methods would allow more opportunities for residents. Less common methods, such as rubrics, received lower effectiveness and satisfaction scores in this

study. It is unclear whether this is because of past experiences, preconceived bias, or lack of standardized educational rubrics.

There are several limitations to this study. Although otolaryngology program directors were sampled nationally, the small sample size may lead to poor generalizability. Multiple studies surveying otolaryngology PDs have had similar response rates, suggesting ours is typical for the cohort.⁹ We chose to sample program directors instead of rhinologists to provide a more comprehensive view. We aimed to examine the perceptions of some of the largest stakeholders in residency education.

In this survey of otolaryngology PDs nationally, informal educational methods were rated as most popular and effective for ESS education, suggesting that the current state of ESS education favors a less structured approach. Further studies are required to assess residents' opinions of current ESS education and to formally evaluate structured resident feedback methods such as rubrics.

Authors' Note

This work was presented as an oral presentation at the Triological Society Combined Sections Meeting, January 25th to 27th, 2024, West Palm Best, Florida, USA.

Author Contributions

Conception & design: R.D. and C.R. Data acquisition: R.D., D.T., M.L., and C.R. Analysis and interpretation: R.D., D.T., M.L., and C.R. Drafting the manuscript: R.D., D.T., M.L., and C.R. Critical revision: R.D., D.T., M.L., and C.R.

Data Availability Statement

Data collected for this study may be made available upon request from the corresponding author.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This research was funded by the University of Chicago Pritzker School of Medicine Summer Research Program for 5,000.


Ethical Approval

The Institutional Review Board exempted this study at the University of Chicago, IRB22-1055.

Guarantor

Christopher R. Roxbury, MD.

ORCID iD

Rose Dimitroyannis  <https://orcid.org/0000-0001-9249-4818>

References

1. Chan M, Carrie S. Training and assessment in functional endoscopic sinus surgery. *J Laryngol Otol.* 2018;132(2):133-137. doi:10.1017/S0022215117002183
2. Martin RCG, Kehdy FJ, Allen JW. Formal training in advanced surgical technologies enhances the surgical residency. *Am J Surg.* 2005;190(2):244-248. doi:10.1016/j.amjsurg.2005.05.020
3. Howard F, McKneally MF, Upshur RE, Levin AV. The formal and informal surgical ethics curriculum: views of resident and staff surgeons in Toronto. *Am J Surg.* 2012;203(2):258-265. doi:10.1016/j.amjsurg.2011.02.008
4. Clark JA, Volchok JA, Hazey JW, Sadighi PJ, Fanelli RD. Initial experience using an endoscopic simulator to train surgical residents in flexible endoscopy in a community medical center residency program. *Curr Surg.* 2005;62(1):59-63. doi:10.1016/j.cursur.2004.07.002
5. Toprak A, Luhanga U, Jones S, Winthrop A, McEwen L. Validation of a novel intraoperative assessment tool: the surgical procedure feedback rubric. *Am J Surg.* 2016;211(2):369-376. doi:10.1016/j.amjsurg.2015.08.032
6. R Core Team. *R: A Language and Environment for Statistical Computing.* R Foundation for Statistical Computing; 2022.
7. Cevik AA, ElZubeir M, Abu-Zidan FM, Shaban S. Team-based learning improves knowledge and retention in an emergency medicine clerkship. *Int J Emerg Med.* 2019;12(1):6. doi:10.1186/s12245-019-0222-2
8. Becker S, Gonser P, Haas M, et al. ENT residents benefit from a structured operation planning approach in the training of functional endoscopic sinus surgery. *Medicina (Kaunas, Lithuania).* 2021;57(10):1062. doi:10.3390/medicina57101062
9. Newsome H, Faucett EA, Chelius T, Flanary V. Diversity in otolaryngology residency programs: a survey of otolaryngology program directors. *Otolaryngol Head Neck Surg.* 2018;158(6):995-1001. doi:10.1177/0194599818770614