The Journal of Education in Perioperative Medicine

Original Research

Publication Rate of Abstracts Presented at the 2011-2019 Society for Education in Anesthesia Meetings

Dante A. Cerza, MD, MACM
Collin F. Battista, MD
Gautam Sharma, MD
Tetsuro Sakai, MD, PhD, MHA, FASA

Introduction

Scientific societies support the dissemination of ideas, innovations, discoveries, and findings through multiple media. Presentation at meetings enables the sharing of science in real time to audiences and allows for questions, feedback, and plans for collaboration. Publication of articles in peer-reviewed journals provides a standing record that allows for broad access and reference and often meets higher standards.

The Society for Education in Anesthesia (SEA) serves its mission to advance anesthesia education in part by providing opportunities to share abstracts on anesthesia education, through either oral or poster presentation, at its annual spring meetings. SEA meetings feature 2 abstract categories: Research in Education and Innovative Curriculum. The latter category represents work that is specific to the educational focus of societies such as SEA. The SEA Research Committee in particular is invested in the sharing of scholarly work on anesthesia education, serving its stated mission: "The SEA Research Committee's mission is to support the SEA members' endeavor to develop innovative educational curricula and successfully conduct original educational research projects. The ultimate goal is to facilitate disseminating these scholarly products and enrich the educational experience of the medical students, anesthesiology trainees, and faculty members nationally and internationally."[1] The SEA Research Committee, of which this study's last author is chair and first author is chair-designee, serves this mission by reviewing the abstracts submitted for presentation at SEA annual meetings and by promoting further dissemination of this scholarly work through publication. Although dozens of projects pertaining to education in the specialty of anesthesiology are presented annually at the SEA spring meetings, the number of these works that go on to be published in PubMed-indexed journals remains unknown.

Several previous studies have investigated the rates of publication of abstracts presented at scientific meetings. Over the past decade, studies on abstracts presented at U.S.-based biomedical and health care specialty society meetings have reported overall publication rates of 21%-72.3% in PubMed-indexed journals.[2-12] However, to our knowledge, studies reporting the rates of publication of abstracts of analogous societies focused on education within a medical specialty, such as the Association for Surgical Education, have not been published. Our study sought to elucidate the rate at which abstracts presented at SEA spring meetings over a 9-year period (2011-2019) went on to be published in PubMed-indexed journals. In the interest of evaluating further dissemination of curricula presented at SEA annual meetings, which are of particular interest in our education-focused society, we investigated the publication rates of abstracts in the Innovative Curriculum and Research categories. We also sought to determine how featuring these curriculum abstracts influenced the overall publication rate of the abstracts, testing a hypothesis that abstracts submitted in the Research category were published at a higher rate than abstracts submitted in the Innovative Curriculum category. We also investigated the time between meeting presentation and journal publication, as well as the journals publishing the articles representing these works.

Materials and Methods

We gathered information pertaining to abstracts presented at SEA spring meetings from 2011-2019 from meeting brochures and abstract review records archived annually. We catalogued information on each abstract, including authors, affiliated institutions of the first authors, titles, years of presentation, and categories (Research vs Curriculum).

For each abstract, we searched PubMed to find publications that reported the work presented at SEA annual meetings. Because we anticipated that titles and listed authors may change from abstract presentation to its corresponding manuscript publication, we accounted for these differences by performing a search for related works in PubMed with search criteria including the first author's last name and first initial,

continued on next page

continued from previous page

both as listed on the submitted abstract. This search strategy required that the first author of the abstract be listed as an author in the published manuscript, but not necessarily as first author. This search strategy potentially excluded manuscripts if they did not include the first author of the abstract. From this list that included published articles that corresponded as well as those that did not correspond to the work presented in the abstracts, we narrowed those results by filtering out entries whose authors had institutions that did not match the institution of the abstract's first author.

Among the PubMed hits that we identified as potential matches to the SEA meeting abstracts, we identified matches between the published articles' work and the work presented at the meetings by reviewing the titles and abstracts of the PubMed results. We noted the matches, recording the articles' authors, titles, journals, and publication dates. Three different authors performed data searches and any discrepancies were resolved by further discussion among the authors.

The total numbers of abstract presentations and their corresponding PubMed-indexed publications per abstract category per presentation year were described. The rate of publication was calculated for each abstract category as well for both categories combined for the entire study period. We calculated the number of years from presentation to publication for each abstract-article pair. A list of PubMed-indexed journals in which the abstract-based manuscripts were published with the numbers of such publications was created.

Data were described in numbers and percentages. The number of years from presentation to publication for each abstract-article pair was described with the mean ± standard deviation. The publication rates of each abstract category were calculated and compared by calculating the odds ratio (OR) and using a Pearson χ^2 test. A P value of less than .05 was considered statistically significant. The analysis was performed using Microsoft Excel for Mac, version 16.54.

Results

Among 371 abstracts submitted for presentation at SEA spring meetings from 2011-2019, a total of 351 (94.6%) abstracts (128 in the Research category and 223 in the Curriculum category) were accepted and presented at the meetings (Figure 1).

A total of 52 abstracts were published as PubMed-indexed articles, which yielded an overall publication rate of 15% (Figure 1). Table 1 lists the PubMed-indexed articles corresponding to the abstracts presented at SEA annual spring meetings. The publication rate of Research abstracts, 24.2% (31/128), was significantly higher than that of Curriculum abstracts, 9.4% (21/223), with an OR of 3.1 (95% confidence interval, 1.7-5.6; P = .0003).

Among the abstracts that resulted in publications in PubMed-indexed journals, the gap between abstract presentation and publication was 1.7 ± 1.3 years. Twenty different journals published these 52 abstract works (Table 2); the journals with the most abstract publications were *The Journal of Education in Perioperative Medicine* (17; 32%), followed by *Anesthesia & Analgesia* (5; 10%) and *Journal of Clinical Anesthesia* (5; 10%).

Discussion

Our study revealed that 15% of the 351 abstracts presented at SEA spring meetings from 2011-2019 went on to be published as articles in PubMed-indexed journals an average of 1.7 years after presentation. Compared with the Curriculum abstracts, the Research abstracts were 3.1 times more likely to go on to publication. Twenty different journals published these works, led by *The Journal for Education in Perioperative Medicine*, which is the official journal of SEA.

This overall publication rate for abstracts published at SEA meetings fell below the 21%-72.3% publication rates previously reported in the past decade for other biomedical and health care specialty society meetings.[2-12]

Whereas SEA is a health care specialty society like those featured in the 11 studies referenced in the previous paragraph, it is important to note that its focus on education and training differs from the clinical focus of these other societies. This difference in focus may account for the publication rate that falls outside the range reported for the other societies. No analogous article reporting on publication rates of abstracts of other societies with a focus on education in clinical specialties, such as the Association for Surgical Education, could be found in the PubMed database. However, a study by Sawatsky et al[13] reported the publication rate (44%) of a subset of abstracts presented at the Society of General Internal Medicine Annual Meeting that were identified as medical education abstracts.

The lower rate of publication of abstracts in the Innovative Curriculum category largely explains why the overall rate falls below the publication rates of other societies' abstracts. This finding is consistent with a finding by Sawatsky et al[13] that the Society of General Internal Medicine's innovations in medical education abstracts were published at a significantly less frequent rate than their scientific abstracts on medical education (34% vs 53%, respectively).

We speculate that a major factor contributing to the lower odds of publication of curriculum abstracts than of research abstracts is the curriculum abstract presenters' failure to present meaningful results that demonstrate the impact of their curricula. To enhance the quality of curriculum abstracts and their suitability for publication, educators should critically consider and select methods that evaluate the effectiveness of the curricula at the time of planning and development. Furthermore, these educators should consider submission to journals that feature publication of curriculum abstracts, such as MedEdPORTAL (https://www.mededportal.org).

The low rate of publication of works presented as abstracts at SEA meetings is also attributable in part to an inclusive paradigm for accepting submitted abstracts. The high acceptance rate (94.6%) indicates less-stringent criteria for abstract acceptance than would be used for manuscripts submitted for publication. Furthermore, the acceptance of abstracts that report on projects that have not been completed also contributes to the low publication rate. As members of the SEA Research Committee tasked with evaluating

continued on next page

continued from previous page

the submitted abstracts, 2 of the authors of this manuscript (T.S. and D.A.C.), serving as chair and chair-designee, respectively, of the SEA Research Committee, have noted over several years of reviewing abstracts that many of the abstracts reported incomplete projects, including pilot studies and even proposals for research studies and curricular interventions. Walsh et al[14] previously found that the publication of "work in progress" abstracts presented at Research in Medical Education and Canadian Conference on Medical Education meetings to have significantly lower publication rates than abstracts reporting completed work (22.0% vs 41.7%, respectively).

The Research Committee responded to this deficiency by making complete projects with full reporting of final results a mandatory criterion for acceptance of abstracts for presentation in the Research and Innovative Curriculum categories beginning with the 2021 SEA Spring Meeting. The concurrent development of a third category for submission, Innovative Ideas, provides an opportunity for submission of proposals for projects and incomplete work. Rather than accept these proposals as abstracts for presentation in the Research and Curriculum categories, the Research Committee has referred selected proposals for presentation at an Idea Lab workshop featured at the past 3 SEA spring meetings, where the proposals' authors receive feedback and recommendations from peers in attendance as well as expert facilitators. Also serving its mission to promote dissemination of discoveries and advancements in anesthesia education, the Research Committee recently developed a SEA Research Mentorship Program in which mentors with a record of success in publishing scholarly work provide longitudinal mentorship to peers who are developing and executing a project in anesthesia education. This mentorship program in its initial year focused on mentorship for research projects but is expanding its focus to aid in the development of curricular projects.

Our finding of a broad distribution of journals publishing these articles matches with results from analogous studies. Hackett et al[15] found 20 journals publishing 6 or more of the 913 published abstracts from International Liver Transplantation Society annual meetings. The average time from presentation to publication of SEA abstracts is just 1.7 years, a relatively low average time to publication, compared with the International Liver Transplantation Society abstracts, 90% of which went on to publication within 46 months (3.8 years).[15]

This study had several limitations. Consistent with analogous studies on the publication of work presented at other societies' meetings, our data collection plan limited the search to publications indexed on PubMed, excluding publications indexed through other web search engines such as Google Scholar. Authors of other studies[16] have called into question whether this search strategy could fully capture all the published works; however, our highly inclusive search strategy, followed by extensive evaluation of found candidate matches, lends assurance for the completeness of our findings. Our search would exclude works published after the period in we which we performed the publication search; however, our finding of a confidence interval of 1.3 years around an average time from presentation to publication of 1.7 years lends assurance that very few of the abstracts from the 9 years of meetings had yet to appear in journals.

In summary, the low publication rate we discovered signals opportunities for new directions in our effort to serve SEA's mission to promote the sharing of discoveries and advancements in anesthesia education. Formative feedback and mentorship such as that provided through the longitudinal SEA Research Mentorship Program and the Idea Lab Workshop at annual spring meetings will motivate and guide future endeavors for scholarly work in this area. Our future investigative efforts will focus on our abstract presenters' and society members' attitudes towards scholarly work and intention to engage in and ultimately publish their work, as well as the impact of the SEA Research Committee's endeavors—including the Idea Lab Workshop and the Mentorship Program—to enhance the scholarly work in medical education and its dissemination.

Acknowledgments

We thank Andrew Bronson, CAE (Executive Director, Society for Education in Anesthesia [SEA]) for providing information on the abstracts presented at the SEA spring meetings. We also thank Ms Christine Burr (scientific writer, Department of Anesthesiology and Perioperative Medicine, University of Pittsburgh, Pittsburgh, PA) for her editorial assistance. Some parts of this study were presented in a podium presentation at the 2022 Society for Education in Anesthesia Spring Meeting, Pittsburgh, PA, April 8, 2022.

References

1. Society for Education in Anesthesia website. https://www.seahq.org/research. Accessed March 21, 2023.
2. Amarilyo G, Woo JM, Furst DE, et al. Publication outcomes of abstracts presented at an American College of Rheumatology/Association of Rheumatology Health Professionals annual scientific meeting. *Arthritis Care Res (Hoboken)*. 2013;65(4):622-9.
3. Bakkum BW, Chapman C, Johnson C. Publication rates of abstracts presented at the Association of Chiropractic Colleges Educational Conference/ Research Agenda Conference from 2002 to 2008. *J Chiropr Educ*. 2014;28(1):32-40.
4. Muffly TM, Calderwood CS, Davis KM, Connell KA. The fate of abstracts presented at annual meetings of the American Urogynecologic Society from 2007 to 2008. *Female Pelvic Med Reconstr Surg*. 2014;20(3):137-40.
5. Manuck TA, Barbour K, Janicki L, et al. Conversion of Society for Maternal-Fetal Medicine abstract presentations to manuscript publications. *Am J Obstet Gynecol*. 2015;213(3):405.e1-6.
6. Bakkum BW, Trachimowicz R. Publication rates of abstracts presented at the 2006 Meeting of the American Academy of Optometry. *Optom Vis Sci*. 2015;92(11):1069-75.
7. Greene DN, Wilson AR, Bailey NM, Schmidt RL. Publication outcome of abstracts presented at the AACC annual meeting. *Clin Chim Acta*. 2016;456:49-55.
8. Furness H, Miller GW, Putt O, Lewis TL. Fate of abstracts presented at the annual meetings of the American Association of Clinical Anatomists. *Clin Anat*. 2017;30(2):140-4.
9. Bonfield CM, Pellegrino R, Berkman J, et al. Oral presentation to publication: publication rates of abstract presentations across two pediatric neurosurgical meetings. *J Neurosurg Pediatr*. 2018;21(6):650-4.
10. Greig CJ, Zhang L, Armenia SJ, et al. The impact of pediatric surgical specialty meetings: a 5-year analysis of presented abstracts. *J Surg Res*. 2019;238:16-22.

continued on next page

continued from previous page

11. Ramos MB, Matté Dagostini C, Rabau O, et al. Publication rate of abstracts presented at the annual meetings of the AANS/CNS Section on Disorders of the Spine and Peripheral Nerves. *J Neurosurg Spine*. 2020:1-8.
12. Maisner RS, Ayyala HS, Agag RL. Abstract to publication in microsurgery: what are the discrepancies? *J Reconstr Microsurg*. 2020;36(8):577-82.
13. Sawatsky AP, Beckman TJ, Edakkanambeth Varayil J, et al. Association between study quality and publication rates of medical education abstracts presented at the Society of General Internal Medicine Annual Meeting. *J Gen Intern Med*. 2015;30(8):1172-7.
14. Walsh CM, Fung M, Ginsburg S. Publication of results of abstracts presented at medical education conferences. *JAMA*. 2013;310(21):2307-9.
15. Hackett PJ, Guirguis M, Sakai N, Sakai T. Fate of abstracts presented at the 2004-2008 International Liver Transplantation Society meetings. *Liver Transpl*. 2014;20(3):355-60.
16. Solano JL, Richardson T, Walker JM et al. Pathways to publication in pediatric hospital medicine educational research. *Hosp Pediatr*. 2020;10(11):992-6.

Dante A. Cerza *is an Attending Physician at Nemours Children's Hospital, Delaware, Wilmington, DE, and Chair-Designee of the Society for Education in Anesthesia Research Committee, Milwaukee, WI.* ***Collin F. Battista*** *is a Resident Physician at New York University Grossman School of Medicine, New York, NY.* ***Gautam Sharma*** *is an Assistant Professor of Anesthesiology at the University of Arizona, Tucson, AZ.* ***Tetsuro Sakai*** *is a Professor of Anesthesiology and Perioperative Medicine at the University of Pittsburgh School of Medicine, Pittsburgh, PA, and Chair of the Society for Education in Anesthesia Research Committee, Milwaukee, WI.*

Corresponding author: *Dante A. Cerza, MD, MACM, Nemours Children's Hospital Delaware, Department of Anesthesiology, 1600 Rockland Road, Wilmington, DE. Telephone: (302) 651-5350, Fax: (302) 651-4185*

Email address: *Dante A. Cerza: dante.cerza@outlook.com*

Financial support: *None*

Abstract

Introduction: The Society for Education in Anesthesia (SEA) promotes dissemination of discoveries and innovations. We investigated the rate of publication of SEA Spring Meeting abstracts, hypothesizing that Research abstracts were published more frequently than Innovative Curriculum abstracts. We also studied the time between abstract presentation and publication and tracked the journals in which they were published.

Methods: All abstracts presented at SEA spring meetings from 2011-2019 were included. We searched PubMed for published articles that were based on those SEA abstracts. We calculated the overall publication rate and the respective publication rates for Research and Innovative Curriculum abstracts. We calculated odds ratio (OR) and performed the Pearson $\chi 2$ test to compare publication rates between Research abstracts and Innovative Curriculum abstracts. We calculated the mean number of years between meeting presentation and publication and tabulated the number of works published in each journal.

Results: A total of 351 abstracts (128 Research and 223 Curriculum) were presented at SEA spring meetings. The overall publication rate was 15% (52/351). Research abstracts were published more frequently than Curriculum abstracts: 24.2% (31/128) versus 9.4% (21/223); OR = 3.1 (95% confidence interval, 1.7-5.6); P = .0003. The mean time from presentation to publication was 1.7 ± 1.3 years. The works appeared in 20 different journals.

Conclusion: SEA Spring Meeting abstracts were published less frequently than abstracts from other medical professional society meetings (21%-72.3%). Although the lower publication rate of Innovative Curriculum abstracts unique to the SEA meeting largely explains this shortfall, a relatively low publication rate, even for the Research abstracts, signals opportunities for growth.

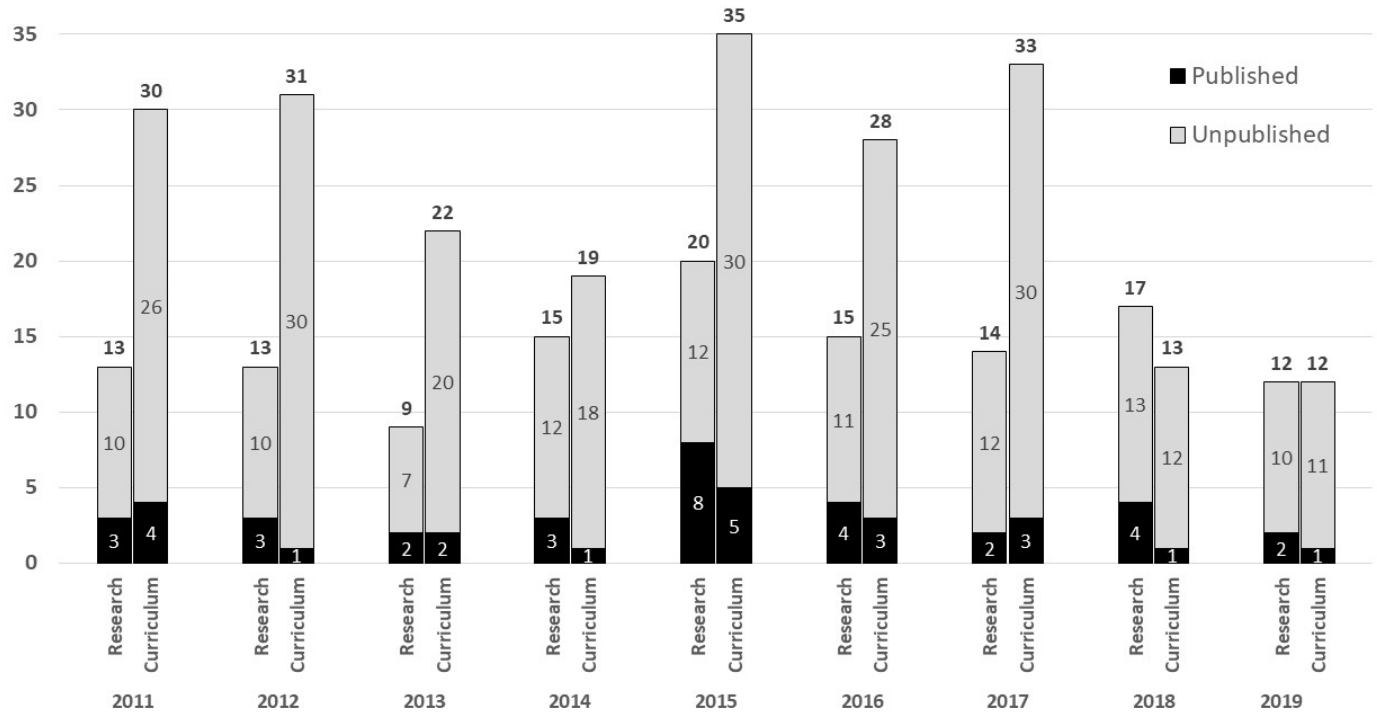
Keywords: Medical education, medical societies, abstracts, meeting abstract, publishing, unpublished work

continued on next page

continued from previous page

Figure

Figure 1. *Number of abstracts, by category with or without publication, presented at Society for Education in Anesthesia meetings from 2011-2019.*



continued on next page

continued from previous page

Tables

Table 1. *PubMed-indexed articles corresponding to the abstracts presented at SEA annual spring meetings*

1.	Ortiz J. The impact of an ultrasound-guided regional anesthesia workshop on resident knowledge: a pilot study. *J Educ Perioper Med.* 2012 Jul 1;14(3):E062.
2.	Latif RK, VanHorne EM, Kandadai SK, et al. Teaching basic lung isolation skills on human anatomy simulator: attainment and retention of lung isolation skills. *BMC Anesthesiol.* 2016;16:7.
3.	Sakai T, Karausky PL, Valenti SL, Sandusky SL, Hirsch SC, Xu Y. Use of a problem-based learning discussion format to teach anesthesiology residents research fundamentals. *J Clin Anesth.* 2013;25(6):434-8.
4.	Straker TM, Metz S. An innovative use of an online procedure logbook to improve airway training among anesthesiology residents. *J Educ Perioper Med.* 2014;16(8):E074.
5.	Backeris ME, Patel RM, Metro DG, Sakai T. Impact of a productivity-based compensation system on faculty clinical teaching scores, as evaluated by anesthesiology residents. *J Clin Anesth.* 2013;25(3):209-13.
6.	Emerick T, Metro D, Patel R, Sakai T. Scholarly activity points: a new tool to evaluate resident scholarly productivity. *Br J Anaesth.* 2013;111(3):468-76.
7.	Casabianca AB, Berger JS, Papadimos TJ, Capwell-Burns A. The effect of previous resident interactions on the assessment of interpersonal and communication skills by teaching faculty: Are we the best evaluators? *J Educ Perioper Med.* 2015;17(1):E001.
8.	Martinelli SM, McGraw KA, Kalbaugh CA, et al. A novel core competencies-based academic medicine curriculum: Description and preliminary results. *J Educ Perioper Med.* 2014;16(10):E076.
9.	Vinson AE, Mitchell JD. Assessing levels of support for residents following adverse outcomes: a national survey of anesthesia residency programs in the United States. *Med Teach.* 2014;36(10):858-66.
10.	Sakai T, Emerick TD, Metro DG, et al. Facilitation of resident scholarly activity: strategy and outcome analyses using historical resident cohorts and a rank-to-match population. *Anesthesiology.* 2014;120(1):111-9.
11.	Sakai T, Hudson M, Davis P, Williams J. Integration of academic and clinical performance-based faculty compensation plans: a system and its impact on an anaesthesiology department. *Br J Anaesth.* 2013;111(4):636-50.
12.	Joseph JA, Terry CM, Waller EJ, et al. Enhancement of anesthesiology in-training exam performance with institution of an academic improvement policy. *J Educ Perioper Med.* 2014;16(6):E072.
13.	Murray AM, Wiisanen MT. APEP—Anesthesiology preceptorship enrichment program…A popular student curriculum AND a recruiting tool? *J Educ Perioper Med.* 2016;18(1):E402.
14.	Schott NJ, Emerick TD, Metro DG, Sakai T. The cost of resident scholarly activity and its effect on resident clinical experience. *Anesth Analg.* 2013;117(5):1211-6.
15.	Turner BC, Tsai MH, Black IH, Mathews DM, Adams DC. Observations: clinical revenue directly attributable to anesthesiology residents. *J Grad Med Educ.* 2014;6(2):384.
16.	Kosik E. A briefing regarding in situ simulation: An emerging educational safety tool for anesthesiology and perioperative medicine. *Int Anesthesiol Clin.* 2015;53(4):98-114.
17.	Kazior MR, Wang J, Stiegler MP, Nguyen D, Rebel A, Isaak RS. Emergency manuals improved novice physician performance during simulated ICU emergencies. *J Educ Perioper Med.* 2017;19(3):E608.
18.	Rebel A, DiLorenzo A, Fragneto RY, et al. Objective assessment of anesthesiology resident skills using an innovative competition-based simulation approach. *A A Case Rep*. 2015;5(5):79-87.
19.	Curry SE. Teaching medical students clinical anesthesia. *Anesth Analg.* 2018;126(5):1687-1694

continued on next page

continued from previous page

Tables *continued*

20. Goldhaber-Fiebert SN, Lei V, Nandagopal K, Bereknyei S. Emergency manual implementation: can brief simulation-based or staff trainings increase familiarity and planned clinical use? *Jt Comm J Qual Patient Saf.* 2015 May;41(5):212-20.
21. Meyers L, Mahoney B, Schaffernocker T, et al. The effect of supplemental high-fidelity simulation training in medical students. *BMC Med Educ.* 2020 Nov 10;20(1):421.
22. Rinehart J, Seong J, Alem N, et al. Anesthesiology residency curriculum and implementation of a perioperative surgical home curriculum: a survey study. *J Educ Perioper Med.* 2017;19(3):E609.
23. Jones SB, Munro MG, Feldman LS, et al. Fundamental use of surgical energy (FUSE): an essential educational program for operating room safety. *Perm J.* 2017;21:16-050.
24. Demirel D, Yu A, Halic T, et al. Virtual airway skills trainer (VAST) simulator. *Stud Health Technol Inform.* 2016;220:91-7.
25. Mitchell JD, Montealegre-Gallegos M, Mahmood F, et al. Multimodal perioperative ultrasound course for interns allows for enhanced acquisition and retention of skills and knowledge. *A A Case Rep.* 2015;5(7):119-23.
26. Lim G, Krohner RG, Metro DG, Rosario BL, Jeong JH, Sakai T. Low-fidelity haptic simulation versus mental imagery training for epidural anesthesia technical achievement in novice anesthesiology residents: a randomized comparative study. *Anesth Analg.* 2016;122(5):1516-23.
27. Samuelson ST, Burnett G, Sim AJ, et al. Simulation as a set-up for technical proficiency: can a virtual warm-up improve live fibre-optic intubation? *Br J Anaesth.* 2016;116(3):398-404.
28. Sakai T, Emerick TD, Patel RM. A retrospective review of required projects in systems-based practice in a single anesthesiology residency: a 10-year experience. *J Clin Anesth.* 2015;27(6):451-6.
29. Goldhaber-Fiebert SN, Lei V, Nandagopal K, Bereknyei S. Emergency manual implementation: can brief simulation-based or staff trainings increase familiarity and planned clinical use? *Jt Comm J Qual Patient Saf.* 2015;41(5):212-20.
30. Liu M, Salmon M, Zaidi R, et al. Ultrasound-guided regional anesthesia: feasibility and effectiveness of teaching via telesimulation in Ethiopia. *Reg Anesth Pain Med.* 2021;46(8):722-6.
31. Udani AD, Harrison TK, Mariano ER, et al. Comparative-effectiveness of simulation-based deliberate practice versus self-guided practice on resident anesthesiologists' acquisition of ultrasound-guided regional anesthesia skills. *Reg Anesth Pain Med.* 2016;41(2):151-7.
32. Goldberg A, Samuelson S, Khelemsky Y, et al. Exposure to simulated mortality affects resident performance during assessment scenarios. *Simul Healthc.* 2017;12(5):282-8.
33. Bustamante S, Bose S, Kraenzler E. The teaching on wheels cart (TowCart) portable simulator to improve resident training in lung isolation. *J Cardiothorac Vasc Anesth.* 2015;29(3):e29-30.
34. Kulig AW, Blanchard RD. Use of cognitive simulation during anesthesiology resident applicant interviews to assess higher-order thinking. *J Grad Med Educ.* 2016;8(3):417-21.
35. O'Donoghue MA, Martel J. Goal-oriented anesthesia week for MS III students. *J Educ Perioper Med.* 2016;18(1):E403.
36. Eosakul ST, Wong V, Ku CM, Mitchell JD. Learning preferences of first-year anesthesiology residents during their orientation month: a single-institution study. *A A Pract.* 2019;12(3):88-92.
37. Chen F, Arora H, Martinelli SM, et al. The predictive value of pre-recruitment achievement on resident performance in anesthesiology. *J Clin Anesth.* 2017;39:139-44.
38. Nelson JH, Deutsch N, Cohen IT, Reddy SK. Are prior experience and subspecialty training time predictive of pediatric anesthesia exit exam scores for rotating CA-2 residents? *J Educ Perioper Med.* 2017;19(1):E504.
39. Rebel A, DiLorenzo A, Nguyen D, et al. Should objective structured clinical examinations assist the clinical competency committee in assigning anesthesiology milestones competency? *Anesth Analg.* 2019;129(1):226-34.

continued on next page

continued from previous page

Tables *continued*

40. Subramaniam K, Gelzinis TA, Lazar S, Bains S, Ball RD, Metro DG. Basic transesophageal echocardiography education for senior anesthesiology residents-institutional experience. *J Cardiothorac Vasc Anesth.* 2022;36(1):155-62.
41. Chen F, Arora H, Martinelli SM. Use of key performance indicators to improve milestone assessment in semi-annual clinical competency committee meetings. *J Educ Perioper Med.* 2017;19(4):E611.
42. Rebel A, Dilorenzo A, Isaak R, et al. Replicating an educational OSCE Project for skill assessment of junior anesthesiology residents at multiple institutions: a qualitative description. *J Educ Perioper Med.* 2018;20(2):E622.
43. Mitchell JD, Ku C, Lutz B, Shahul S, Wong V, Jones SB. Customizable curriculum to enhance resident communication skills. *Anesth Analg.* 2019;129(5):e155-8.
44. Gill G, Ho G, Hopkins A, et al. Evaluation of knowledge acquisition with a practice management course for anesthesiology residents: a pilot study. *J Educ Perioper Med.* 2019;21(1):E630.
45. Martinelli SM, Isaak RS, Chidgey BA, et al. Family comes first: a pilot study of the incorporation of social support into resident well-being. *J Educ Perioper Med.* 2020;22(4):E652.
46. Lee SC, Huang H, Minard CG, Schackman J, Rajagopalan S. The use of podcast videos for airway skills. *Clin Teach.* 2019 Dec;16(6):585-8.
47. Chen F, Carter TB, Maguire DP, Blanchard EE, Martinelli SM, Isaak RS. Experience is the teacher of all things: prior participation in anesthesiology OSCEs enhances communication of treatment options with simulated high-risk patients. *J Educ Perioper Med.* 2019;21(3):E626.
48. Ungerman EA, Vogt KM, Sakai T, Metro DG, Adams PS. Wellness principles correlate with more favorable burnout scores in junior anesthesiology residents. *J Educ Perioper Med.* 2020;22(1):E636,
49. Adams DR, Vogt KM, Norton CM, Metro DG. Financial incentive, in place of nonclinical time, increases faculty involvement and improves resident didactic evaluation scores in an anesthesiology residency training program. *J Educ Perioper Med.* 2019;21(4):E630.
50. Brouillette MA, Aidoo AJ, Hondras MA, et al. Regional anesthesia training model for resource-limited settings: a prospective single-center observational study with pre-post evaluations. *Reg Anesth Pain Med.* 45(7):528-35.
51. Carullo PC, Ungerman EA, Metro DG, Adams PS. The impact of a smartphone meditation application on anesthesia trainee well-being. *J Clin Anesth.* 2021;75:110525.
52. Ballard HA, Tsao M, Robles A, et al. Use of a simulation-based mastery learning curriculum to improve ultrasound-guided vascular access skills of pediatric anesthesiologists. *Paediatr Anaesth.* 2020;30(11):1204-10.

Abbreviation: SEA, Society for Education in Anesthesia.

continued on next page

continued from previous page

Tables *continued*

Table 2. *Journals publishing articles presented as Curriculum and Research abstracts at SEA meetings from 2011-2019*

Journal	Total Published Abstracts = 52	Curriculum Abstracts Published = 21	Research Abstracts Published = 31
Journal of Education in Perioperative Medicine	17 (33)[a]	10 (48)	7 (23)
Anesthesia & Analgesia	5 (10)	0	5 (16)
Journal of Clinical Anesthesia	5	1 (5)	4 (13)
British Journal of Anesthesia	3 (6)	0	3 (10)
Regional Anesthesia and Pain Medicine	3	1	2 (7)
A&A Case Reports	2 (3)	0	2
Journal of Cardiothoracic and Vascular Anesthesia	2	2 (10)	0
Journal of Graduate Medical Education	2	1	1 (3)
Joint Commission Journal on Quality and Patient Safety	2	1	1
A&A Practice	1	0	1
Anesthesiology	1	0	1
BMC Anesthesiology	1	1	0
BMC Medical Education	1	1	0
Clinical Teacher	1	0	1
International Anesthesiology Clinics	1	1	0
Medical Teacher	1	0	1
Pediatric Anesthesia	1	0	1
The Permanente Journal	1	1	0
Simulation in Health Care	1	0	1
Studies Health Technology and Informatics	1	1	0

Abbreviation: SEA, Society for Education in Anesthesia.

[a] Parentheses indicate percentage, rounded off to one decimal place.