


SPECIAL CONTRIBUTION

Education

National needs assessment of emergency medicine faculty regarding scholarly activity practices and support

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Abstract

Objectives: We aimed to assess the attitudes and perceptions of scholarly activity (SA) practices among emergency medicine (EM) physicians who are engaged in training residents. This study examined the belief and need for modern-day SA, potential barriers, and department resources provided.

Methods: We conducted a descriptive cross-sectional survey study of EM physicians across the United States identified from the American College of Emergency Physicians and American College of Osteopathic Physicians directories. The survey consisted of 18 items regarding demographics, attitude toward SA, department support, and questions regarding residency programs.

Results: A total of 660 survey recipients completed the survey out of a possible pool of 4296 individuals (15% response rate), of which 530 (80%) indicated they were core faculty. Of core faculty, 428 (80.8%) were part of an allopathic program, whereas 102 (19.2%) were part of an osteopathic program. Department support was provided for protected time (385; 58.3%), research staff (346; 52.4%), Institutional Review Board preparation (240; 36.4%), and biostatistics (314; 47.6%). Of all the institutional roles, the largest percentage (82/125, 65.6%) of chair/vice chair/associate chairs strongly agreed or agreed (score of 5 or 4 of 5) with the statement, "Overall, I am satisfied with the scholarly support provided by my department." There was no difference in agreement with this statement between respondents in an allopathic versus osteopathic program (210/428, 49.1% allopathic; 45/102, 44.1% osteopathic).

Conclusion: There is a need for increased departmental support for SA. To optimally implement the Accreditation Council for Graduate Medical Education (ACGME) SA requirements into strategy and action, the ACGME should consider providing EM residency programs with an outline of best SA practices to foster a uniform consensus across academic institutions.

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1 | INTRODUCTION

1.1 | Background

Scholarly activity (SA), as it relates to graduate medical education (GME), is essential for the growth and development of faculty, residents, and medical students, as it fosters an environment of scientific inquiry and investigation, advances clinical knowledge as it pertains to patient care, and teaches the importance of being on the forefront of medical advancements. In addition to maximizing clinical exposure and practical skills experience, residents must be equipped with the skills to develop and advance clinical knowledge, an essential component of practicing evidence-based medicine and improving the quality of patient care.¹

In accordance with the Accreditation Council for Graduate Medical Education (ACGME) guidelines, SA practices in residency programs typically involve evaluating, conducting, and disseminating research as well as participating in quality and performance improvement initiatives to implement new changes in clinical practice for improving patient outcomes.^{2,3} Resident/fellow SA requirements for emergency medicine (EM), as outlined by the ACGME, are listed in Table 1. Faculty SA requirements are listed in Table 2. However, there is a wide variety of SA practices and no uniform consensus across academic institutions about which practices define SA within GME (Table 3).⁴

The needs of EM faculty regarding SA have not been analyzed quantitatively in the past. Previously, the Review Committee for Emergency Medicine (RC-EM) of the ACGME conducted a cross-sectional online survey of program or research directors from all US allopathic EM residency programs in 2015 to describe the SA practices of EM residencies and to describe the challenges and resources for residents in completing the SA requirements.⁷ The study concluded that there is no consistent interpretation of the RC-EM requirement for SA among EM residency programs. However, this study only surveyed program and research directors, and did not include the rest of the faculty that is involved in residency SA, or discuss the differences between allopathic and osteopathic programs.

1.2 | Importance

Previous studies have attempted to define and standardize SA practice.⁴ Past medical educators often have used theoretical frameworks such as the four Boyer principles to define scholarship: discovery, integration, application, and teaching.^{4,8} Others suggested that scholarship involves content experts applying their knowledge by educating others and allowing for peer review in the process, evaluating the teaching modalities for efficacy, and collecting continuous

TABLE 1 Summary of scholarship program responsibilities for emergency medicine programs adapted from the Accreditation Council for Graduate Medical Education (ACGME).

Scholarship

Medicine is both an art and a science. The physician is a humanistic scientist who cares for patients. This requires the ability to think critically, evaluate the literature, appropriately assimilate new knowledge, and practice lifelong learning. The program and faculty must create an environment that fosters the acquisition of such skills through resident participation in scholarly activities. Scholarly activities may include discovery, integration, application, and teaching.

The ACGME recognizes the diversity of residencies and anticipates that programs prepare physicians for a variety of roles, including clinicians, scientists, and educators. It is expected that the program's scholarship will reflect its mission(s) and aims, and the needs of the community it serves. For example, some programs may concentrate their scholarly activity on quality improvement, population health, and/or teaching, while other programs might choose to utilize more classic forms of biomedical research as the focus for scholarship.

Program responsibilities

- The program must demonstrate evidence of scholarly activities consistent with its mission(s) and aims.
- The program, in partnership with its sponsoring institution, must allocate adequate resources to facilitate resident and faculty involvement in scholarly activities.
- The program must advance residents' knowledge and practice of the scholarly approach to evidence-based patient care.

Background and intent

The scholarly approach can be defined as a synthesis of teaching, learning, and research with the aim of encouraging curiosity and critical thinking based on an understanding of physiology, pathophysiology, differential diagnosis, treatments, treatment alternatives, efficiency of care, and patient safety. While some faculty members are responsible for fulfilling the traditional elements of scholarship through research, integration, and teaching, all faculty members are responsible for advancing residents' scholarly approach to patient care.

Elements of a scholarly approach to patient care include the following:

- Asking meaningful questions to stimulate residents to utilize learning resources to create a differential diagnosis, a diagnostic algorithm, and treatment plan.
- Challenging the evidence that the residents use to reach their medical decisions so that they understand the benefits and limits of the medical literature.
- When appropriate, dissemination of scholarly learning in a peer-reviewed manner (publication or presentation).
- Improving resident learning by encouraging them to teach using a scholarly approach.

The scholarly approach to patient care begins with curiosity, is grounded in the principles of evidence-based medicine, expands the knowledge base through dissemination, and develops the habits of lifelong learning by encouraging residents to be scholarly teachers.

TABLE 2 Summary of emergency medicine-specific requirements referencing “resident/fellow scholarly activity” adapted from the Accreditation Council for Graduate Medical Education (ACGME).⁵

Specialty-specific requirements referencing “resident/fellow scholarly activity” for emergency medicine

Residency scholarly activity

- a. Residents must participate in scholarship.
- b. The curriculum must advance the residents’ knowledge of the basic principles of research, including how research is conducted, evaluated, explained to patients, and applied to patient care.
- c. At the time of graduation, each resident should demonstrate:
 1. Active participation in a research project, or formulation and implementation of an original research project, including funded and non-funded basic science or clinical outcomes research, as well as active participation in an emergency department quality improvement project.
 2. Presentation of grand rounds, posters, workshops, quality improvement presentations, podium presentations, and webinars.
 3. Grant leadership, non-peer-reviewed print/electronic resources, articles or publications, book chapters, textbooks, service on professional committee, or serving as a journal reviewer, journal editorial board member, or editor.
 4. Peer-reviewed publications.

TABLE 3 Summary of emergency medicine-specific requirements referencing “faculty scholarly activity” adapted from the Accreditation Council for Graduate Medical Education (ACGME).⁶

Faculty scholarly activity

- a. Among their scholarly activity, programs must demonstrate accomplishments in at least three of the following domains:
 - Research in basic science, education, translational science, patient care, or population health
 - Peer-reviewed grants
 - Quality improvement and/or patient safety initiatives
 - Systematic reviews, meta-analyses review articles, chapters in medical textbooks, or case reports
 - Creation of curricula, evaluation of tools, didactic educational activities, or electronic educational materials
 - Contribution to professional committees, educational organizations, or editorial boards
 - Innovations in education
- b. The program must demonstrate dissemination of scholarly activity within and external to the program by the following methods:
 - Faculty participation in grand rounds, posters, workshops, quality improvement presentations, podium presentations, grant leadership, non-peer-reviewed print/electronic resources, articles or publications, book chapters, textbooks, webinars, service on professional committees, or serving as a journal reviewer, journal editorial board member, or editor.
 - Peer-reviewed publication.

feedback on student learning for areas of improvement.^{9,10} Glassick et al. proposed six principles to define scholarship that integrated both research and teaching—clear goals, adequate preparation, appropriate methods, significant results, effective presentation, and reflective critique.^{9,11} Furthermore, potential barriers were addressed, such as the lack of infrastructure provided by academic institutions to adequately support the development, peer review, and dissemination of scholarly work, resources that are particularly essential to advancing the knowledge within medical education.⁹ Barriers such as lack of managerial support, research equipment, administrative support, and funding, and prioritizing other work roles over SA exist to fulfill the SA requirements across residency programs in various medical specialties.¹²

1.3 | Goals of this investigation

To better understand the future needs of faculty scholarly requirements, we administered a survey to examine the beliefs and need for modern-day SA in EM, including the perceived barriers to engaging in SA and department resources provided. The purpose of this survey was to assess the attitudes and perceptions of SA practices among

EM physicians who work in the emergency department and are also engaged in training residents.

2 | METHODS

2.1 | Study design, setting, and distribution

A cross-sectional survey study was conducted of EM physicians across the United States. The survey consisted of 18 items regarding demographics, attitude toward SA, department support, and questions regarding residency programs. The online survey was developed by the American College of Emergency Physicians (ACEP) research subcommittee members and administered to faculty members listed in the ACEP and American College of Osteopathic Emergency Physicians (ACOEP) directories. The instrument was developed after a narrative review of literature in SA practices and was distributed via Survey Monkey using a web link and email invitation. The survey was created by subcommittee members who used the Delphi technique to develop questions that are important and was done via in-person and virtual meetings and email correspondence but was not psychometrically tested. The study was approved by the Northwell Health Institutional

Review Board (IRB) as an exempt study with a full waiver of informed consent. Participation in the study was voluntary and surveys were anonymous.

A total of 4296 faculty members were identified from the ACEP and ACOEP directories for survey distribution. The survey was initially distributed to ACEP faculty members in July 2019. Additional questions were added to the survey and distributed to ACEOP faculty members in November 2019. The revised survey was redistributed to all ACEP and ACEOP faculty members in January 2020 via a follow-up email to encourage participants to complete the survey.

2.2 | Survey design

The initial survey instrument contained 13 items assessing demographics and SA involvement, satisfaction, and departmental support. The survey was later revised to 18 items applicable to departments with osteopathic residencies. See Appendix 1 for complete survey.

2.3 | Analysis

Statistical analysis was conducted using the GraphPad PRISM software. Quantitative data were represented in counts and proportions. Graphs were utilized to represent data using the GraphPad PRISM software.

3 | RESULTS

A total of 660 of 4296 survey recipients completed the survey (15.3%). Respondents were able to choose multiple roles; however, only the highest role was recorded in the following hierarchy: residency director > assistant/associate program director > chair/vice chair/associate chair > medical student clerkship director > core faculty member > other. The majority of respondents (537/660) were part of allopathic programs (81.4%). See Table 4 for a summary of respondent demographics.

3.1 | Demographics for core faculty members only

Of the 530 respondents that indicated they were core faculty members, 80.8% are part of an allopathic program, whereas 19.2% are part of an osteopathic program. Of all respondents, two (of 660; 0.3%) did not indicate their core faculty status. Table 5 summarizes the core faculty demographics.

3.2 | Scholarly activity support trends among faculty members

A total of 386/660 (58.5%) respondents have supervised residents in a performance improvement project for use as the trainee's SA within the past 3 years, 268/660 (40.6%) have not supervised residents, and

TABLE 4 Summary of respondent demographics.

Demographics	Overall, N (%)
Core faculty ^a (n = 660)	
Yes	530 (80.3)
No	128 (19.4)
Unspecified	2 (0.3)
Duration of core faculty period (n = 530)	
More than 3 years	505 (95.3)
Less than 3 year	23 (4.3)
Unspecified	2 (0.4)
Setting of practice (n = 660)	
Community	133 (20.2)
University	376 (57)
Hybrid	121 (18.3)
Split	20 (3)
Unspecified	10 (1.5)
Role at institution (highest role) (n = 660)	
Residency director	89 (13.5)
Assistant/associate program director	48 (7.3)
Chair/vice chair/associate chair	120 (18.2)
Medical student clerkship director	29 (4.4)
Core faculty member	234 (35.5)
Other	126 (19.1)
Unspecified	14 (2.1)
Type of program (n = 660)	
Allopathic	537 (81.4)
Osteopathic	123 (18.7)

^aThe definition of core faculty was provided to respondents as "faculty members who spend 15 or more hours per week working on the residency program (including clinic work, didactics, research, and administration), or as defined by your program."

6/660 (0.9%) did not respond to this question. For allopathic programs, 279/428 (65.2%) respondents indicated they have supervised a resident in a performance improvement project in the last 3 years. Of the faculty in osteopathic programs, 72/128 (70.6%) responded they had done this. For those that have been core faculty, both allopathic and osteopathic combined, for more than 3 years 342/505 (67.7%) have supervised residents. For those that have core faculty for less than 3 years, 9/23 (39.1%) have supervised residents. See Figure 1 for a representation of the percentage of core faculty that have supervised residents and the duration of their position.

Department support was provided for protected time (385/660; 58.3%), research staff (346/660; 52.4%), IRB preparation (240/660; 36.4%), and biostatistics (314/660; 47.6%) (with respondents allowed to choose more than one response). Despite having protected time available, 145/385 respondents did not supervise residents (37.7%), and 128/346 (37%) respondents who had research staff available did not supervise residents. See Figure 2 for relationship between type

TABLE 5 Summary of core faculty demographics.

	Core faculty (n = 530)		Non-core faculty (n = 128)	
	Allopathic, n (%)	Osteopathic, n (%)	Allopathic, n (%)	Osteopathic, n (%)
	428 (80.8)	102 (19.2)	23 (18)	105 (82)
Setting of practice				
University	275 (64.3)	57 (55.9)	8 (34.8)	34 (32.4)
Community	62 (14.5)	29 (28.4)	6 (26.1)	36 (34.3)
Hybrid	79 (18.5)	15 (14.7)	6 (26.1)	21 (20)
Split	10 (2.3)	1 (1)	3 (13)	6 (5.7)
Unspecified	0 (0)	0 (0)	0 (0)	8 (7.6)
Duration of core faculty period				
More than 3 years	408 (95.3)	97 (95)	13 (56.5)	42 (40)
Less than 3 years	18 (4.2)	5 (5)	5 (21.7)	20 (19)
Unspecified	2 (0.5)	0 (0)	5 (21.7)	43 (41)

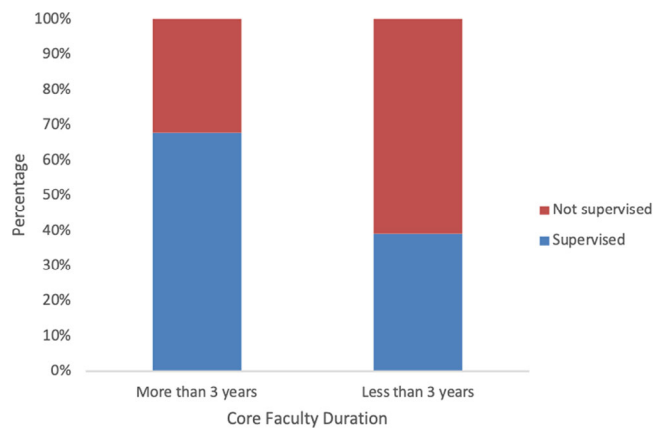


FIGURE 1 Relationship between duration of core faculty position and supervision of residents in a performance improvement project in the past 3 years in emergency medicine residency programs.

of support available and residency supervision. Of those respondents that supervised residents, 190/386 (49.2%) were rewarded with recognition by promotion, 154/386 (39.9%), by bonuses 74/386 (19.2%), or some unspecified reward 18/386 (4.7%), with 118/386 (30.6%) of respondents not receiving any form of reward. Only 149/660 respondents (22.6%) received external funding to support research efforts, and of those 85/149 (57%) received additional protected time for the external funding.

3.3 | Support for and attitudes toward scholarly activity support by setting type

Each setting type reported differences in department support provided in terms of protected time, research staff, IRB staff, and biostatisticians. Protected time was reported as provided by more than half departments in all settings except those that are splitting time. IRB staff was least commonly provided among all settings. Table 6 summarizes the distribution of support provided setting type.

Of all setting types, the largest percentage of those who practiced in hybrid settings (59/121; 48.8%) and university settings (181/376; 48.1%) agreed or strongly agreed with the statement, "Overall, I am satisfied with the scholarly support provided by my department." The largest percentage of those who practice in community settings (48/133; 36.1%) disagreed or strongly disagreed with the aforementioned statement. See Figure 3 for a distribution of scholarly support satisfaction by setting.

The largest percentage of those who practice in a university setting (281/376; 74.7%) or a split setting (15/20; 75%) agreed or strongly agreed that engaging in any kind of SA eventually helps clinical knowledge and practice. The largest percentage of those who practice in a community (18/133; 13.5%) and hybrid (26/121; 21.5%) setting disagreed or strongly disagreed that engaging in any kind of SA eventually helps clinical knowledge and practice. See Figure 4 for the distribution of scores by setting type.

3.4 | Attitudes toward scholarly activity by institutional role

Of all the institutional roles, the largest percentage of chair/vice chair/associate chairs most strongly agreed or agreed with the statement, "Overall, I am satisfied with the scholarly support provided by my department" (82/125; 65.6%). See Table 7 for a summary of respondent satisfaction ratings sorted by institutional role.

3.5 | American Osteopathic Association programs and scholarly activity

Of the 660 respondents, 123 respondents are affiliated with American Osteopathic Association (AOA) programs (18.6%). A majority (66.7%) of AOA programs received ACGME initial accreditation. Most programs were unsure if a citation was received. The most frequently

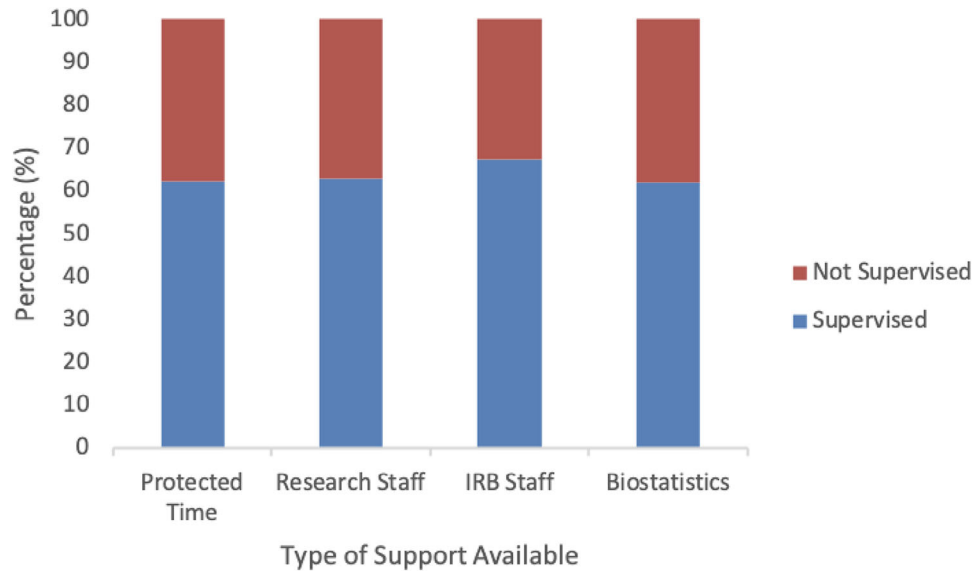


FIGURE 2 Availability of department support in emergency medicine residency programs and resident supervision.

TABLE 6 Department support provided by setting type.

Setting	Department support provided, n (%)			
	Protected time	Research staff	IRB staff	Biostatisticians
Community, n = 133	71 (53.4)	37 (27.8)	41 (30.8)	43 (32.3)
Hybrid, n = 121	77 (63.6)	63 (52.1)	51 (42.1)	59 (48.8)
Time split, n = 20	8 (40)	10 (50)	6 (30)	11 (55)
University, n = 376	227 (60.4)	234 (62.2)	139 (37)	197 (52.4)

Note: Respondents were instructed to select all that applies for department support provided; hence, the percentages do not add to 100%. Abbreviation: IRB, Institutional Review Board.

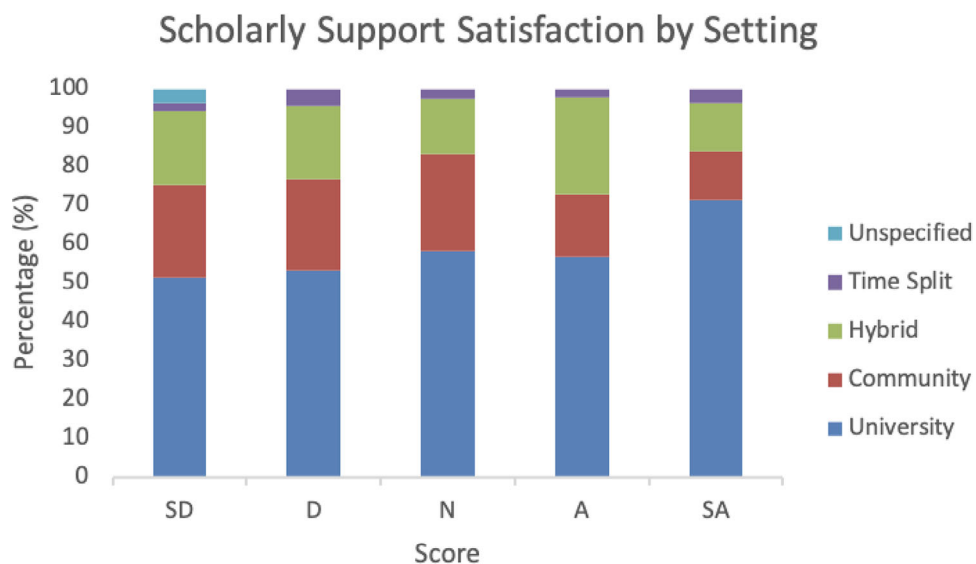


FIGURE 3 Distribution of satisfaction of scholarly support scores by setting type in emergency medicine residency programs. A, agree; D, disagree; N, neutral; SA, strongly agree; SD, strongly disagree.

Agreement of Clinical Knowledge Enhancement by Setting

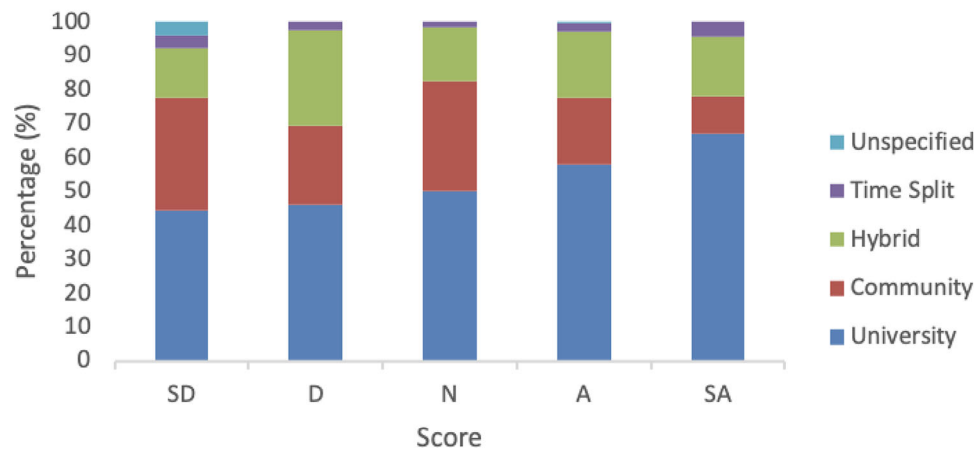


FIGURE 4 Distribution of agreement that scholarly activity improves clinical knowledge and practice by setting type in emergency medicine residency programs.

TABLE 7 Scholarly support satisfaction score by institutional role.

Institutional role	Satisfaction (N = 660), n (%)				
	5—strongly agree	4	3—neutral	2	1—strongly disagree
Residency director	11 (12.2)	30 (33.3)	20 (22.2)	14 (15.6)	13 (14.4)
Assistant/associate program director	6 (12.2)	13 (26.5)	8 (16.3)	13 (26.5)	8 (16.3)
Chair/vice chair/associate chair	42 (33.1)	40 (31.5)	22 (17.3)	13 (10.2)	8 (6.3)
Medical student clerkship director	2 (5.9)	9 (26.5)	10 (29.4)	8 (23.5)	3 (8.8)
Core faculty member	43 (15.9)	74 (27.3)	56 (20.7)	55 (20.3)	40 (14.8)

cited measure taken to correct the citation was providing dedicated faculty protected time for research. Table 8 summarizes ACGME initial accreditation, citations, and measures taken to correct citations for AOA programs.

3.6 | Allopathic support structure versus osteopathic support structure for core faculty

Allopathic and osteopathic core faculty identified the support structure available to them in terms of protected time, research staff, IRB staff, and biostatistics support. Table 9 summarizes the support available for allopathic and osteopathic core faculty at their respective institutions.

3.7 | Attitudes toward scholarly activity for allopathic versus osteopathic core faculty

When posed with the statement “Overall, I am satisfied with the scholarly support provided by my department,” nearly half of allopathic and osteopathic core faculty members agreed or strongly agreed. Table 10

summarizes the attitude towards SA amongst both allopathic and osteopathic core faculty members.

4 | LIMITATIONS

EM program faculty were surveyed across the nation, making our findings generalizable. However, a limitation of this study is our small response rate and vulnerability to sampling bias, where respondents at different levels of their careers such as senior career faculty compared to early career faculty, those working in leadership compared to non-leadership positions, or in university compared to community settings, may have been overrepresented in our sample, which may have affected the study's validity. Our survey was self-administered via email distribution and although invitations to complete the survey were resent to participants, the emails may have not reached all individuals or individuals may not have been aware they received the email if it was sent to their spam or junk mail folders. This study was also voluntary, so individuals may have not been interested in participating. Additionally, response bias of self-reported information may have led to respondents underreporting or overreporting information about the SA practices at their institutions potentially due to

TABLE 8 Summary of accreditation and citations for American Osteopathic Association (AOA) programs.

AOA programs and scholarly activity	N = 123, n (%)
ACGME initial accreditation	
Yes	82 (66.7)
No	7 (5.7)
Unspecified	34 (27.6)
Citation received	
Yes—before initial accreditation	22 (17.8)
Yes—after initial accreditation	8 (6.5)
No	26 (21.1)
Unsure	58 (47.2)
Unspecified	9 (7.3)
Measures taken to correct citation (N = 30)	
Dedicated faculty protected time for research	14 (46.7)
Hired/increased IRB staff	1 (3.3)
Hired/increased biostatistics staff	1 (3.3)
Hired/increased research staff	6 (20)
CME funds for research	1 (3.3)
Other/unspecified	7 (23.3)

Abbreviations: ACGME, Accreditation Council for Graduate Medical Education; IRB, Institutional Review Board.

TABLE 9 Support structure for allopathic and osteopathic core faculty.

Support structure	Allopathic core faculty (N = 428), n (%)	Osteopathic core faculty (N = 102), n (%)
Protected time	269 (62.9)	63 (61.8)
Research staff	252 (58.9)	55 (53.9)
IRB staff	174 (40.7)	38 (37.3)
Biostatistics support	223 (52.1)	53 (52)

Abbreviation: IRB, Institutional Review Board.

misremembering information, or respondents may have agreed more strongly with statements regarding their attitudes and perceptions of SA due to conformity or agreement bias, which may have impacted the accuracy and reliability of results. There was also a non-response error due to respondents skipping questions. However, this was expected since study participation was voluntary, and respondents were free to skip questions they did not want to answer or withdraw their participation at any time. Lastly, our survey questions were not validated, and the instrument was not pilot tested before it was administered to respondents, potentially limiting the reliability of results.

5 | DISCUSSION

SA is mandated by the ACGME, yet no clear definition or standardized curriculum exists to fulfill the scholarship common program requirements. In EM, there is a need to identify the barriers to conducting

SA and provide more support to fulfill SA requirements. However, few studies have examined the differences in SA support and infrastructure available or identified perceived barriers and research-related needs of EM faculty members. Our study was among the first to conduct a national survey of core faculty across a diverse group of practice settings to obtain descriptive information regarding attitudes and perceptions of core faculty members.

In previous research, the lack of support from management along with no dedicated time, lack of research skills, funding, and administrative support were reported as main barriers to research activities for faculty and trainees in specialty and primary care.⁸ These findings suggest that the perception of SA support may be associated with rank and position across several medical specialties including EM. Our study found that there was a discrepancy in perceived support type and infrastructure between EM leadership and junior faculty members. Faculty in leadership positions, especially chairs and vice chairs, perceived an adequate amount of support was provided to conduct SA and exhibited greater satisfaction with support type, compared to junior faculty members who felt SA support was lacking. It is possible that junior faculty members, who are early-on in their careers, are not aware of the resources available to conduct research or may not know how to utilize resources despite being available, due to limited level of research experience. A prior study found that faculty members with limited research skills and productivity may exhibit lower satisfaction with the research experience and result in faculty members without adequate knowledge to mentor trainee research.⁸ Therefore, this is particularly important to address as it may impact the education quality for residents who do not typically have research experience and require formal research training.¹³ Strategies such as curriculum development, mentorship, infrastructure, and departmental support were identified for overcoming SA barriers,¹⁴ which suggests that resources for research support need to be more available and apparent for early career faculty members, in addition to research-related mentorship.

Interestingly, in our study, faculty members who engaged heavily in research did not supervise residents in SA, despite having protected time or research support staff available. This contrasts a prior study where faculty members with more research experience expressed more enthusiasm for mentoring trainee research and suggested that less experienced faculty gain research experience and refine their research skills to increase their interest in research mentorship.⁸ It is possible that faculty members with protected time or funding for research activities are not supervising residents in SA projects given their responsibilities for external funded projects and studies. As suggested in previous literature, faculty members often have limited personal time for resident research and seldom receive compensation or career advancement for their research mentorship efforts.¹³ This however represents a potential area of focus and improvement within mentorship approaches. A future area of work could explore methods to best incentivize and encourage established externally funded investigators (ostensibly among the most experienced clinician-scientists) to engage in sustained efforts to mentor and enhance scholarly activities at the trainee level. Rothberg et al. recommended

TABLE 10 Attitude toward scholarly activity for allopathic versus osteopathic core faculty.

Overall (N = 530); core faculty, N (%)	Satisfaction, N (%)				
	5—strongly agree	4	3—neutral	2	1—strongly disagree
Allopathic, N = 428 (80.8)	82 (19.2)	128 (29.9)	77 (18)	82 (19.2)	58 (13.6)
Osteopathic, N = 102 (19.2)	18 (17.6)	27 (26.5)	31 (30.4)	16 (15.7)	10 (9.8)

that department leadership reward faculty members who supervise resident research to overcome this barrier and incentivize research mentorship.

Providing protected time and funding for resident SA mentorship may enable more faculty investigators to engage with residents. However, access to skilled research mentors may differ between university hospitals and community hospitals, with likely fewer mentors being available in community hospitals.¹³ In prior research, non-university-based internal medicine (IM) residency programs particularly felt the lack of faculty time and faculty mentors created major barriers compared to university programs¹⁵ and received more citations for not meeting SA requirements compared to university programs. Despite this, non-university-based residency programs were more likely to have a SA requirement and more faculty members mentoring residents in SA projects compared to university-based residency programs.¹⁵ This contradicts the findings of our study where respondents reported protected time as a top barrier, of which the majority worked in a university-type setting, compared to a community setting. Furthermore, more respondents who supervised residency SA in our study worked in a university-type setting compared to a community setting and compared to the majority in university settings, only half of respondents in community settings agreed or strongly agreed that SA is important and helps clinical knowledge and practice, which suggests there may be alternate reasons for the discrepancy. Although this study was conducted in IM the findings help reveal that these barriers in SA exist outside of EM as well and comparing the needs assessments of various specialties can help overcome the barriers that exist and further demonstrate the need for a centralized SA requirement understanding. A prior focus group study at family and IM community sites identified lack of mentors, training, and research support staff as major barriers to conducting research in general. However, the largest barrier was lack of time and competing demands but also difficult enrolling patients in research studies due to community distrust in research, especially among minorities.¹⁶ Furthermore, physicians stressed the need for stable revenue from research and have potential benefit to patients in the community. Although these sites did not train residents, it is possible that faculty members in community residency programs feel similarly about barriers to participating in research, which may limit mentorship of resident SA.

In the current study, majority of faculty members were satisfied by the departmental support provided for the SA. More osteopathic program faculty reported supervising resident research than allopathic program faculty, regardless of hospital setting. Although more SA support was provided on every level for allopathic programs, no major

differences were found in research support between allopathic and osteopathic programs. Interestingly, allopathic faculty were less satisfied with the support provided, compared to the large amount of osteopathic faculty who rated neutral for the support provided by their department. To our knowledge, minimal literature exists in this area, but the differences in how the requirements were written in allopathic and osteopathic programs may have led to more osteopathic program faculty supervising resident research. For example, the 2019 ACOEP Common Program Requirements stated that each core faculty member must execute a minimum of two major or one major and two minor SA projects over 4 years.¹⁷ Additionally, the types of projects that constitute major and minor SA are outlined, along with the responsibilities of core faculty members to mentor and support resident SA and receive protected time for residency SA as compensation.¹⁷ Conversely, the ACGME mandates residents to conduct SA and residency programs to allot resources for resident and faculty SA involvement, but measures compliance with SA engagement by reviewing the number of scholarly works produced by faculty members in a program as a whole in aggregate over 5 years for both core and non-core faculty members, rather than evaluating individual faculty members. The ACGME also recognizes in its Common Program Requirements that there may be differences between different specialties and between residencies and fellowships in the same specialty, allowing for some difference in output measures across programs.¹⁸ The ACGME guidance for both resident and faculty SA, as outlined in Tables 1 and 2, remains vague. There is no specification in the ACGME guidelines as to whether a portion of protected time is required to be spent on residency research supervision, what proportion of other SA support resources should be dedicated to facilitating residency research, or how the distribution of responsibilities should be distributed across faculty members. This is particularly important following the 2020 single accreditation merger of allopathic and osteopathic residency programs. Despite the merger, the 2021 ACGME common program requirements, as it pertains to SA, are not as robust as that of past ACEOP common program requirements, which may detrimentally impact the quality of residency education.

There is a need for increased departmental support for SA. To successfully implement the ACGME SA requirements in action, our study suggests that the ACGME should consider providing EM residency programs with an outline of best SA practices which includes a clear delineation of protected time and funding for faculty to be involved in resident mentorship along with a framework of allocation of resources such as research support staff, IRB staff, biostatistics staff, among others to promote SA participation.

AUTHOR CONTRIBUTIONS

Nidhi Garg, Bernard Chang, Christopher Zabbo, Lance Becker, Phillip Levy, Joshua J. Davis, and Manish Shah conceptualized the paper and wrote the survey. Nidhi Garg and Christopher Zabbo contributed toward data collection. Sumedha Garg performed the data analysis. Jennifer Johnson and Pridha Kumar contributed toward writing the manuscript. Pridha Kumar wrote the results section and created Tables 1–4. Nidhi Garg chaired the framework and takes responsibility for the paper as a whole.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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