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Scholarly Activity in Residency: A Needs Assessment of Challenges and Proposed Solutions

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Abstract

Introduction

Resident physician participation in scholarly activity is associated with significant benefits ranging from trainees' personal development to improved quality of patient care. Residency programs have taken varied approaches to improve resident engagement in scholarship, though interventions have demonstrated mixed results regarding objective measures of scholarly productivity. Concerns regarding waning interest in scholarship amongst internal medicine residents prompted a department-wide needs assessment to evaluate opportunities for scholarship and challenges preventing resident participation.

Methods

A web-based survey was developed and distributed to Department of Internal Medicine faculty and residents at the PGY2 level or higher and recent graduates within the last year prior to the study. We investigated perceived opportunities for resident scholarship, perceived challenges with resident scholarly activity, preferences regarding scholarly projects, and faculty experiences with mentorship. Descriptive statistics were used to describe survey responses.

Results

Faculty and trainees shared similar perceptions of inadequate opportunities for resident participation in scholarly activity and endorsed a preference to join ongoing projects early in their course as opposed to starting new projects or joining projects near their completion. Both groups identified lack of resident time as a barrier to resident participation in scholarly activity but faculty were more likely to report lack of resident aptitude for research and lack of faculty time and aptitude for mentorship as challenges.

Conclusions

Residents and faculty are not aware of all the resources in place to support scholarship opportunities for trainees. Resident and faculty time is a significant barrier to resident scholarship and further efforts are needed to support faculty and trainee collaboration while mitigating challenges which limit the use of currently available resources. Regular curricular assessment is necessary to ensure that trainees and faculty are aware of available resources and that those resources are meeting the departments specific needs.

Keywords

trainee scholarly activity; needs assessment; resident scholarship; scholarly mentors

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Cover Page Footnote

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Scholarly Activity in Residency: A Needs Assessment of Challenges and Proposed Solutions

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and faculty are aware of available resources and that those resources are meeting the department's specific needs.

Introduction

Across specialties, resident physicians consider scholarly activity a valuable component of their training.¹⁻⁷ Engagement in scholarly activity enhances participants' critical thinking skills, improves their ability to assess scientific literature critically, and increases the practice of evidence-based medicine, resulting in improved quality of patient care.^{1-3,8} Additionally, scholarly activity fosters mentorship relationships and may both influence career pathways and facilitate residents receiving fellowship acceptances.^{1-3,8,9} Thus, it is understandable that the Accreditation Council for Graduate Medical Education (ACGME) requires resident involvement in scholarly activity as well as program support of these endeavors.¹⁰

Internal medicine residency programs have utilized a broad array of interventions to both promote and support resident scholarship including research requirements, directed curricula, protected time, and appointment of faculty oversight positions tasked with coordinating resources and efforts.^{9,11} These varied and often bundled approaches have all been shown to increase resident participation in scholarly activity, though their effects on objective measures, such as presentations and publications, have been mixed.^{11,12} Learners' needs vary from institution to institution, both due to their varied environments and the unique composition of each learner group.¹³ This may account for the broad range of outcomes reported in the literature when similar interventions have been implemented at different programs while emphasizing the need for ongoing self-assessment of each program with regards to the needs of its learners and impact of its interventions and programming. Upon review of scholarly activity within our institution's Department of Internal Medicine, concerns were raised regarding waning interest in scholarly activity among trainees. As part of a needs assessment, trainees and faculty were surveyed with regards to opportunities for resident

engagement in scholarly activity, perceived challenges to resident engagement in scholarly activity, and preferences on engagement with scholarly activity in order to identify common themes and best direct resources to better support resident engagement in scholarly activity.

Methods

A web-based survey was administered to faculty and trainees within the Department of Internal Medicine at the University of Nebraska Medical Center (UNMC) between July and August 2019. An email containing a link to the questionnaire and its purpose was sent to the university email account of eligible participants. Two reminder emails were sent prior to the survey's end date. Participants were not compensated and responses remained anonymous. Those eligible for participation in the faculty group included all faculty members of the Department of Internal Medicine. The trainee group included all residents within the Internal Medicine and Medicine-Pediatrics residency programs who were at the PGY-2 level or higher, as well as any individual who had graduated from those programs within the previous year. Study data were collected and managed using REDCap electronic data capture tools hosted at UNMC. Service and support were provided by the Research Information Technology Office which is funded by the Vice Chancellor for Research. This anonymous educational improvement survey project was not considered human subject research and was therefore exempt from review by the Institutional Review Board.

The questionnaire was developed based on concerns that arose from an initial review of resident engagement in scholarly activity and was designed in collaboration with residency program leadership including the Department of Internal Medicine Research Chair. Survey data collected included demographic information (age, gender, race, ethnicity), perceived opportunities for resident scholarship, perceived challenges to resident participation in scholarly activity, preferences regarding scholarly projects, and faculty experiences with mentorship. The

trainee group was not surveyed about faculty's previous mentorship experience, but the questionnaires provided to the trainee group and faculty group were otherwise equivalent.

Statistical analysis was performed with the use of SPSS, version 22. Chi-squared testing was used for the comparison of categorical variables between groups. The Student's T-Test was used when comparing means between groups. P-values less than 0.05 were considered of statistical significance.

Results

Forty-six of 79 trainees (58%) and 72 of 263 faculty (27%) submitted the questionnaire. Demographic data (Table 1) was comparable between trainees and faculty except for age, which was expected. Forty-three percent of faculty were between the age of 30-40

years, 33% between 41-50, and 17% were greater than 50 years of age.

There was no significant difference between trainee and faculty perceptions regarding the availability of opportunities for scholarly activity on campus (Figure 1). Fifty percent of trainees and 36% of faculty felt there was either just enough or more than enough opportunities for internal medicine residents to engage in scholarly activity during their residency. There was no significant difference between trainees and faculty when asked to rank their preferences on joining a project, as demonstrated in Figure 2. Both groups indicated a preference to join ongoing projects over starting a project from scratch. Similarly, both groups least preferred joining a project near its completion for the writing process.

Table 2 exhibits trainees and faculty perceived challenges with resident engagement in scholarly activity. There was strong agreement

that lack of time was a barrier to resident scholarship, which is consistent with previous studies across specialties.^{2,3,5-8,11,14} Trainee and faculty perceptions regarding resident training in research methods and resident attitude towards scholarly activity were discordant. Sixty-three percent of faculty felt resident training in research methods was limited, while only 37% of residents agreed with this statement ($p=0.007$). Similarly, half of faculty believed that residents did not think that research was important, while less than a quarter of trainees endorsed this belief. Faculty were significantly more likely than trainees to report both that faculty members lacked adequate time and possessed insufficient skillsets to effectively mentor. Trainees and faculty seemed to agree that resident aspirations and career choices were not factors which detracted from engagement in scholarly activity. There was no significant difference between trainee and

Table 1. Trainee and Faculty Respondent Demographics. Trainee and faculty information is detailed based on questionnaire responses. Responses are presented as percentages with the total number of respondents within each group in parentheses.

Respondent Demographics	Trainee % (N)	Faculty % (N)
Age, Trainee (years)		
26-30	61 (28)	
31-35	33 (15)	
>35	2 (1)	
Unanswered	4 (2)	
Age, Faculty (years)		
30-40		43 (31)
41-50		33 (24)
>50		17 (12)
Unanswered		7 (5)
Gender		
Male	52 (24)	53 (36)
Female	46 (21)	47 (32)
Unanswered	2 (1)	6 (4)
Race		
African American	2 (1)	0 (0)
Asian	4 (2)	6 (4)
White	76 (35)	88 (63)
2 or more races	7 (3)	0 (0)
Unanswered	11 (5)	7 (5)
Ethnicity		
Hispanic	4 (2)	4 (3)
Non-Hispanic	89 (41)	83 (60)
Unanswered	7 (3)	13 (8)

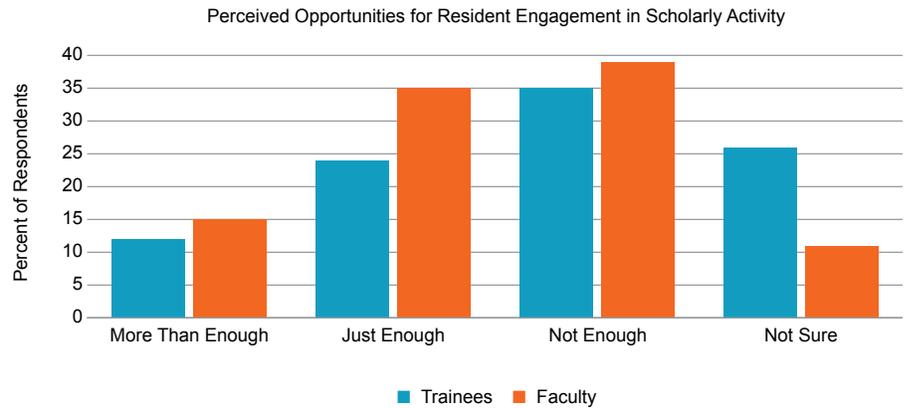


Figure 1. Respondent Perceptions of Opportunities for Resident Engagement in Scholarly Activity. Trainees and faculty responses are reported as a percentage. No significant difference in trainee and faculty responses was appreciated.

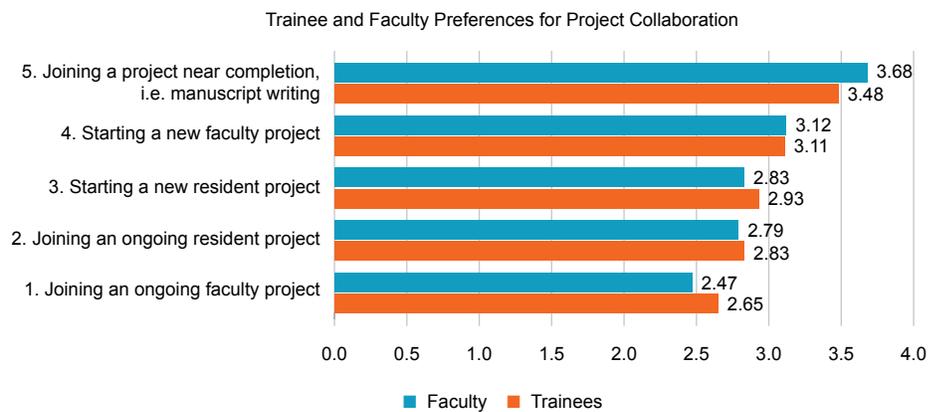


Figure 2. Trainee and Faculty Preferences for Project Collaboration. Trainees and faculty ranked preferences for project collaboration from 1 through 5, 1 being the most desirable and 5 being the least desirable. Responses were averaged and presented above. The lower the response value, the more desirable it was to the respective group; while trainee and faculty responses were congruent, no statistical significance was demonstrated between the presented project opportunities.

faculty understanding of scholarly activity requirements, though a surprising proportion of faculty (19% of respondents) did not recognize that participation in scholarly activity is required of residents by the ACGME.

Discussion

The ACGME requires residency programs to dedicate resources towards the promotion of resident and faculty scholarly activity.¹⁰ Each program should regularly review the impact of these efforts in order to better allocate resources and develop programming targeted at addressing its trainees' specific needs. We identified several challenges to robust engagement in scholarly activity and proposed solutions to these (Figure 3). Survey of our trainees and faculty revealed that less than half of respondents felt there were adequate opportunities for resident participation in scholarly activity. While a broad definition of scholarly activity was used in our questionnaire, it is possible that a fixed understanding of scholarly activity, limited to original research and systematic reviews, exists within our program and this aspect was not evaluated.

The UNMC Department of Internal Medicine receives approximately 20 million dollars in external funding directed towards active research projects conducted across 10 divisions. Funding opportunities exist for both resident-directed research and quality improvement projects. Travel awards and a resident and fellow poster session exist to facilitate dissemination of trainees' scholarly activity. Additionally, the Graduate Medical Education Office provides resources including assistance with study design, data collection, statistical support, and presentation development to facilitate resident scholarship.

Additional challenges preventing utilization of these resources and a lack of resident awareness regarding active scholarship on campus likely contribute to the belief that there is a paucity of opportunities for resident engagement in scholarly activity. Residents are provided information on resources available to facilitate scholarly activity during their orientation and this information is available on the university website. Still, it is unlikely that residents are prepared to use these resources when first informed of them; once residents are settled into their training programs and these resources are more applicable, additional effort is required from residents in order to locate and learn about these offerings. Compiling information on these offerings in order to create a physical

Table 2.

Perceived Challenges with Resident Engagement in Scholarly Activity (SA). Responses are presented as percentages followed by the number of respondents in parentheses. Chi-squared testing was used to compare groups and p-values < 0.05 were considered of statistical significance. The * following a prompt delineates statistical significance between groups.

Perceived Challenges with Resident Engagement in SA	Trainee agreement % (N)	Faculty agreement % (N)	p-value
Inadequate time for SA	85 (39)	78 (56)	0.349
Residents have limited in research methods*	37 (17)	63 (45)	0.007
Residents may not think research is important*	22 (10)	50 (36)	0.002
There is no requirement for SA in residency	7 (3)	19 (14)	0.051
Resident career choices do not necessitate SA	15 (7)	7 (5)	0.147
Most residents will not go into academic medicine	15 (7)	25 (18)	0.205
Faculty lack adequate time to mentor*	15 (7)	42 (30)	0.003
Faculty do not know how to mentor effectively*	17 (8)	36 (26)	0.029

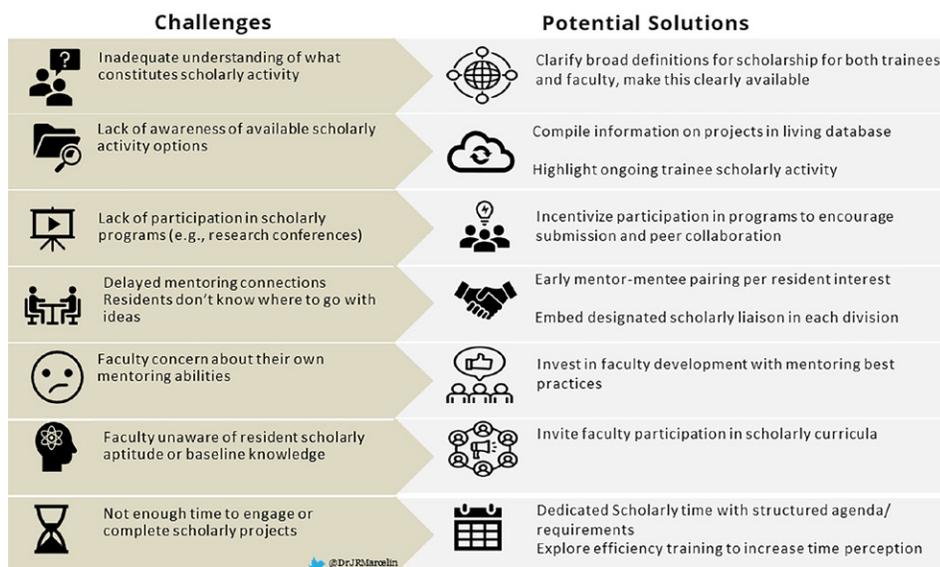


Figure 3. Scholarly Activity in Residency: Challenges and Potential Solutions

reference located in a highly trafficked area may increase their utilization, serving as both a physical reminder of their existence and decreasing barriers to their use. Highlighting ongoing trainee scholarly activity may potentially encourage residents to engage in scholarship of their own. Our Department of Internal Medicine has an annual scholarly activity conference to showcase this work, but participation in this activity has not been robust. As a result, we are developing new awards to incentivize both participation and collaboration on scholarly activity. We developed scholarly shoutouts on social media and in weekly announcements, and plans to develop a publication of the quarter initiative

which highlights notable publications featuring Internal Medicine trainees as major contributing authors.

Trainees and faculty expressed a preference to join projects that are underway but not yet near completion. Additional challenges associated with starting a new scholarly project such project design, securing funding, and obtaining institutional review board as well as the time these prerequisites require may deter individuals from initiating or seeking to join new projects. Additionally, projects that require multiple years for completion are not well suited for trainees to join early in their course, given residents'

limited time in their training programs. While the appreciation of this preference amongst trainees and faculty should not deter them from collaborating on new projects, it highlights the need to connect residents and faculty members on projects which may be in varying stages of completion. Identifying faculty members interested in collaborating with residents and creating and maintaining a database of both active projects and project ideas categorized by topic and stage of completion may facilitate connecting residents with projects of interest. Due to the number of projects occurring within the Department of Internal Medicine across divisions, an appointed member from each division tasked with keeping this information up to date would almost certainly be required for such a resource to remain pragmatic. Residents could also contribute project ideas to such a database to facilitate connection with a like-minded mentor.

Inadequate faculty mentorship is frequently cited as a barrier to resident engagement in scholarly activity.^{1,5-7,15} Residents who self-initiate mentorship relationships report greater satisfaction from their mentorship than do residents with assigned mentors.¹⁵ Working with faculty members while performing clinical duties is reported as a means for residents to identify mentors, but relying on these interactions alone may limit the total number of potential mentors which residents are exposed to and delay their connection with a mentor. Our residency program has reinforced our mentorship program by facilitating connections between new residents and potential mentors immediately after matching, based on new resident preference. Additionally, residents may directly contact divisions based on personal interests or career aspirations, but this requires additional effort on behalf of the resident. This proverbial “cold call” may also result in mixed results as those petitioned often know little about the resident; responses often lack important details such as faculty interests, background, and personality. Working with a resident advisor in order to identify a faculty mentor may facilitate connecting with a mentor.¹¹ Chief residents could serve as suitable resident advisors, connecting new residents to like-minded faculty with shared interests early in residency. In this arrangement, chief residents benefit from early career development, serving as advisors to interns and developing their own mentorship skills. Our department has additionally embedded research/scholarly liaisons within each division to facilitate connections between residents with ideas and potential scholarly mentors.

Interestingly, faculty members perceived faculty time and a deficiency of best mentoring practices among faculty members as a greater barrier to resident scholarship than trainees did. Residents may not expect the same time commitments from faculty members as faculty expect is required for mentorship. A lack of confidence in one’s mentoring capabilities may deter faculty members from actively engaging in mentor-mentee relationships. If residents are primarily connecting with mentors who possess self-efficacy for mentorship, they may not appreciate that other faculty lack this proficiency. Dedicated career development and education on best mentoring practices may empower faculty members interested in mentoring to take on a more active role in resident development.

Beyond issues of self-confidence, faculty may be hesitant to work with residents based on the endorsed perception that residents lack the skill set necessary to carry out scholarly activity. Sixty-three percent of faculty felt residents had limited training in research methodology while only 37% of trainees endorsed this belief. It is possible that residents overestimate their aptitude for research. Still, trainees are exposed to several longitudinal curricula directed towards various skills necessary for successful engagement in scholarly activity. Residents participate in monthly journal clubs and are responsible for presenting an article at least once per academic cycle. Residents are also required to take part in a longitudinal quality improvement curriculum which involves protected lectures, an in-depth assessment and presentation on a patient safety event, and an outpatient quality improvement project driven by the individuals’ continuity patient panels’ quality metrics. Interested residents have the opportunity to partake in recurring research interest group luncheons which occur monthly over a protected noon hour. While each departmental division has an assigned faculty research representative, faculty who are unaware of these curricula may underappreciate residents’ exposure to research methodology. Inviting interested faculty members to participate in these programs may facilitate change in preconceptions about residents’ aptitude for scholarship.

Time may be the most interesting barrier to resident engagement in scholarly activity. Both trainees and faculty identified time constraints as an impediment as have numerous studies evaluating or attempting to increase resident scholarship.^{2,3,5-8,11,14} Protected research blocks or recurring

research days have been implemented in order to address this, but while these interventions have demonstrated increased resident satisfaction they have resulted in mixed outcomes with respect to resident productivity.^{3,5,9,11,12,16} At our institution, residents with at least second-year standing have the opportunity for one or three-month elective research rotations. Over the last 5 academic cycles, only 30% of eligible residents have taken advantage of this offering. Our program offers residents the opportunity to take a research week twice per year on vacation-eligible rotations, but this was only recently implemented, and its impact and utilization cannot be readily evaluated at this time. Further investigation as to why resources are underutilized should be carried out so that programming efforts can be better matched to resident needs, improving their utilization and impact. While it seems that protected time should clearly address the issue of limited resident time for scholarly activities, it often does not address residents’ day-to-day clinical obligations outside of the scheduled time period. Residents who are overwhelmed by day-to-day responsibilities may be less willing to take on a scholarly project even if the opportunity for protected time exists. A significant amount of resident time is dedicated to documentation and interaction with the electronic medical record.¹⁷⁻¹⁹ No study has looked at the impact of structured efficiency training on residents’ perception of free time, workload, or scholarly engagement. A structured program dedicated to improving resident efficiency with electronic medical record navigation and documentation early in residency may decrease the perception that time is a barrier to scholarship.

Limitations

This was a single center evaluation and the perceptions of trainees and faculty at our institution may not be applicable to other internal medicine residency programs. This was a cross-sectional survey which evaluated trainee and faculty perceptions at a single point in time; thus, it may be subject to influence from factors external to residency programming. Only a fraction, 27%, of surveyed faculty submitted a questionnaire. These faculty respondents most likely include those faculty members who are most interested in mentoring trainees and collaborating with residents on scholarly projects, introducing bias to our assessment. Awareness regarding specific initiatives and their perceived impact were not investigated, thus we can only speculate about possible associations between existing programming

and perceptions of resident scholarship on our campus.

Conclusion

As part of a needs assessment investigating the state of scholarly activity among residents within the UNMC Department of Internal Medicine, trainee and faculty respondents expressed that there were insufficient opportunities for resident engagement in scholarly activity. This realization emphasized that existing efforts directed towards resident engagement were overlooked or were not adequately directed at resident needs. Ensuring residents and faculty are aware of available scholarly opportunities and support services is necessary in order to assess whether existing initiatives address trainee needs. Minimizing barriers to resource utilization is important to maximize the impact of programming. A wide variety of approaches have been implemented at different residency programs aiming to increase resident engagement in scholarly activity and improve resident productivity, but similar efforts may have disparate outcomes when implemented at different training programs. Efforts aimed at supporting early mentor identification, faculty development, and formal efficiency training for residents are several approaches which have not been heavily reported on but which may promote resident scholarship. Trainees at different programs will have differing needs, and there may not be a single universal solution to this problem. Regular assessment of programming directed towards enhancing resident scholarship is necessary to confirm suitability, identify areas for growth, and judiciously allocate resources. ■

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