

# Outcomes of a Scholarly Activity Curriculum for Family Medicine Residents

Tharani Ravi, MD; Inez Cruz, PhD, LMSW; Fozia Ali, MD; Sandra Burge, PhD; Robert Wood, DrPH; Jasmine Rodriguez, MPH

**BACKGROUND AND OBJECTIVES:** Scholarship is essential to growth and innovation in family medicine. Moreover, the Accreditation Council for Graduate Medical Education Review Committee-Family Medicine requires family medicine residents to complete scholarly activities. However, many residents lack the training and confidence to successfully conduct such activities. In the year 2014, our residency implemented a scholarly activity curriculum to train our residents to plan, complete, and disseminate research and quality improvement projects. We sought to evaluate the impact of one institution's scholarly activity curriculum for family medicine residents on resident scholarly activity productivity.

**METHODS:** We reviewed the scholarly activities conducted by our family medicine residents in the 5 years after initiation of the scholarly activity curriculum and compared them to those conducted in the 5 years prior to initiation of the curriculum.

**RESULTS:** Since 2014, the percentage of residents who coauthored at least one poster increased significantly, from 55.2% in 2009-2014, to 82.5% in 2014-2019 ( $P < .001$ ). In the academic years 2014 to 2019, residents also coauthored significantly more book chapters compared to the 5 years prior to the curriculum.

**CONCLUSIONS:** Our curriculum has been successful in improving resident scholarly activity productivity as evidenced by a significant increase in the percentage of residents coauthoring posters and the total number of book chapters written by residents.

(Fam Med. 2021;53(4):285-8.)  
doi: 10.22454/FamMed.2021.812680

Scholarly activity in family medicine is a vital part of residency training. It shapes how future primary care physicians will practice evidence-based medicine and incorporate quality improvement (QI) into their busy schedules. Training residents in scholarly activities equips them with knowledge and skills, enhances confidence, promotes long-term participation in

scholarship, and helps their program maintain accreditation.<sup>1-4</sup> In 2009, a national survey of family medicine residencies found that 76% had research curricula, but 87% reported that less than 25% of residents published manuscripts, and 80% had less than six resident presentations at conferences during the preceding 2 years.<sup>5</sup> Various factors are associated with increased resident

participation in research, including formal recognition for scholarship, dedicated research time, local Research Day, faculty involvement, program director support and involvement in research, research curricula, and professional support.<sup>5-8</sup>

Several residency programs have implemented initiatives that improved resident scholarship.<sup>2,9-13</sup> One program increased quality projects per resident with a point system for rewarding scholarship, and a resident research coordinator.<sup>11,12</sup> Another program created a longitudinal curriculum that provided research and QI education along with concurrent faculty-guided development of project ideas. The residents were also assigned vital tasks to complete along the way to help them advance their projects and present their findings at conferences.<sup>10</sup> Sharing different resident scholarship initiatives is important to assess strengths and needs, evaluate outcomes, and determine applicability to other residency programs. This study describes a scholarly activity curriculum for family medicine residents, and evaluates its impact on scholarly productivity.

From University of Texas Health, San Antonio - Family Medicine.

## Methods

Our family medicine residency is a university-based program in a county-funded health system in San Antonio, Texas. This evaluation included all family medicine PGY-1 through PGY-3 residents in our residency program during July 2009 to June 2014 (preintervention) and July 2014 to June 2019 (postintervention).

### Intervention

The family medicine scholarly activity curriculum has several elements: monthly Research Hour, community medicine rotation, opportunities to showcase scholarly work, and research resources (Figure 1).

**Research Hour.** Research Hour is a required monthly didactic session, that was first implemented in academic year 2014-2015. It includes a 20-minute interactive lecture on a scholarship topic followed by 40 minutes of small group work. Small groups brainstorm new project ideas, advance ongoing projects, organize institutional review board (IRB) applications, revise book chapters, and/or prepare poster submissions. Community medicine, research, and quality improvement (QI) projects are all integrated into Research Hour with guidance from faculty (Figure 1).

**Community Medicine Rotation.** The PGY-2 community medicine rotation places residents in a variety of underserved clinical settings and provides opportunities for scholarship. Residents organize health fairs, conduct needs assessments, and provide health education to address community needs. The entire PGY-2 class collaborates to complete a year-long QI project. This rotation schedules 2-4 half days per week in a research center, providing protected scholarship time.

**Scholarship Showcase.** Our department holds an annual Scholarship Day to celebrate scholarly work and community-oriented research conducted by residents and faculty. We hold a poster competition and

present awards. Scholarship Day is held in June during PGY-1 orientation to introduce interns to our scholarship culture.

**Resources for Scholarship.** Residents have staff assistance from the department's research division, including statistical support. Residents receive administrative leave and funding for travel to conferences. Key funding sources for travel include residents' local travel scholarships, Texas Higher Education Coordinating Board, and University Hospital's House Staff Council.

**Faculty.** The curriculum is led by two clinical faculty with experience in community work and quality improvement, and a research division supervisor who oversees grant submissions and management. A statistician funded by the research division provides crucial assistance with data analysis. Clinical faculty typically use 2 half-days per month from their administrative time to lead residents' scholarship efforts. When the new scholarship curriculum began in July 2014, no other significant changes occurred in the residency program, such as new research faculty or new scholarship requirements.

### Evaluation

To analyze the impact of our curriculum on productivity, we reviewed residents' scholarly activities in the 5 years after initiation of this curriculum (July 2014 to June 2019) and compared them to those conducted in the 5 years prior (July 2009 to June 2014). We counted poster presentations at medical conferences, poster awards, number of residents coauthoring posters, published papers, and book chapters. Some posters were presented at more than one conference but each distinct poster was counted only once. We used two-sample  $\chi^2$  analyses to evaluate differences between precurriculum and postcurriculum periods for total number poster presentations, residents coauthoring at least one poster,

and total number of book chapters. The University of Texas Health at San Antonio granted this project IRB approval.

## Results

### Demographics

This scholarship curriculum began in July 2014. From July 2009 to June 2019, 160 residents attended the residency; 39 were male and 121 were female. Eighty-seven residents attended our residency in the academic years from 2009-2014 and 97 residents in 2014-2019.

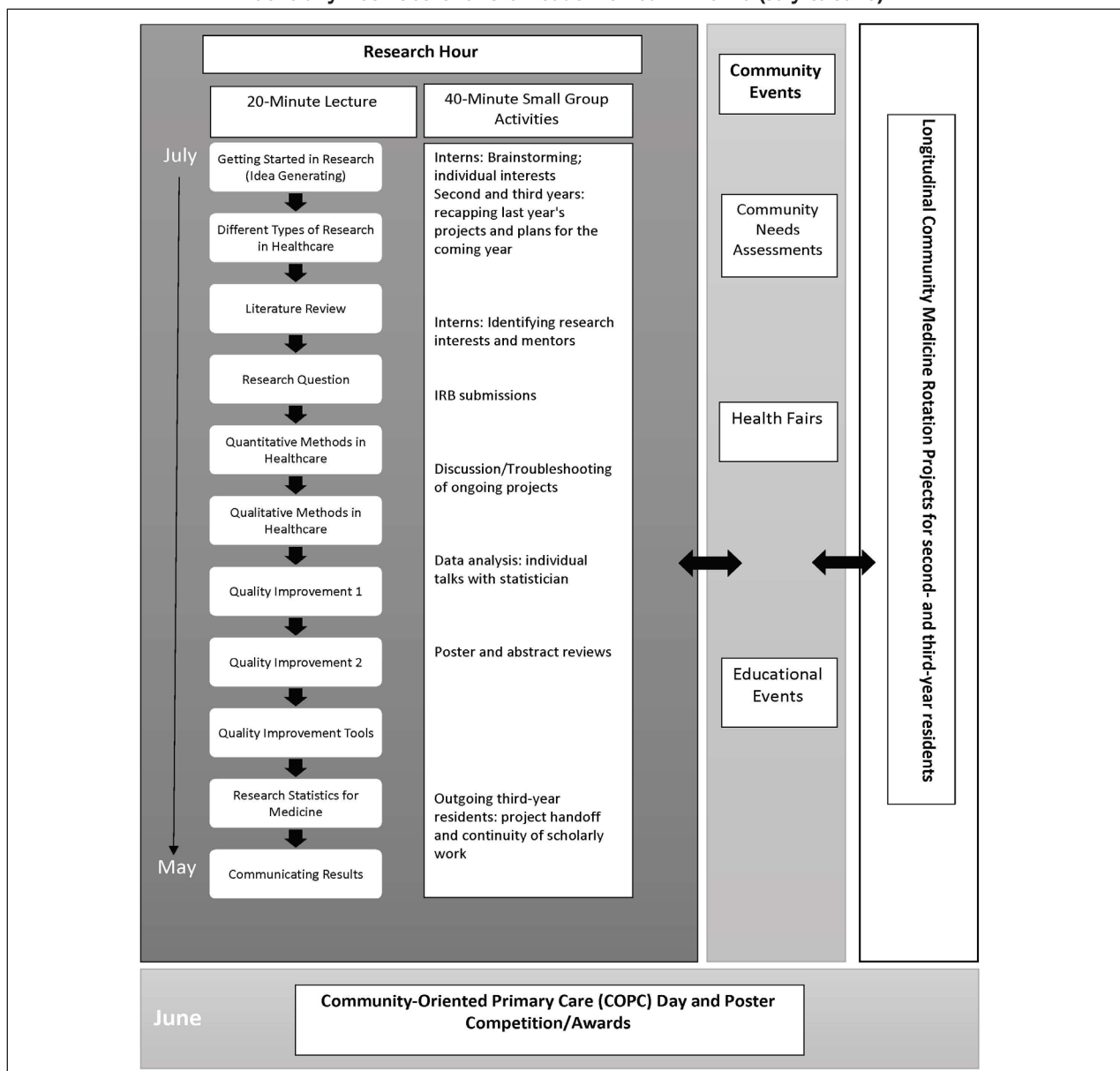
### Impact on Residents' Scholarship

Between July 2014 and June 2019, residents presented 59 posters at national, international, and regional conferences, compared to 47 posters in the 5 years prior ( $P=.35$ ). Residents' receipt of poster presentation awards was the same in both periods: five posters won regional awards and one won a national award in each period. The percentage of residents who coauthored at least one poster increased, from 55.2% in the 5 years precurriculum to 82.5% in the 5 years after the curriculum ( $P<.001$ ). For the entire 10 years of this evaluation, no residents published journal articles. During academic years 2014-2019, residents coauthored 82 book chapters with faculty supervision in the *5-Minute Clinical Consult*, compared to 45 book chapters in 2009-2014 ( $P<.05$ , Figure 2).

## Discussion

Our scholarly activity curriculum increased resident scholarly productivity over the 5 years since its initiation. The curriculum's success can be attributed to program characteristics associated with higher resident participation in research<sup>10,14</sup>: dedicated research time, research curricula, faculty involvement, annual scholarship day, statistical support, and guidance and assistance from the Family Medicine Research Division. We have strong backing from leadership, funds for residents to present at medical conferences,

**Figure 1: Schematic of Research Hour Content and Its Linkage With Other Resident Scholarly Activities Over the Academic Year Timeline (July to June)**



and a culture of celebrating scholarly work. The importance of aligning these enabling factors is supported by a recent review of residency scholarship that suggested bundling interventions and providing multiple pathways increase residents' participation in scholarly activity.<sup>7</sup> Rather than imposing a specific research assignment or setting internal deadlines, our curriculum functions organically, supporting the work

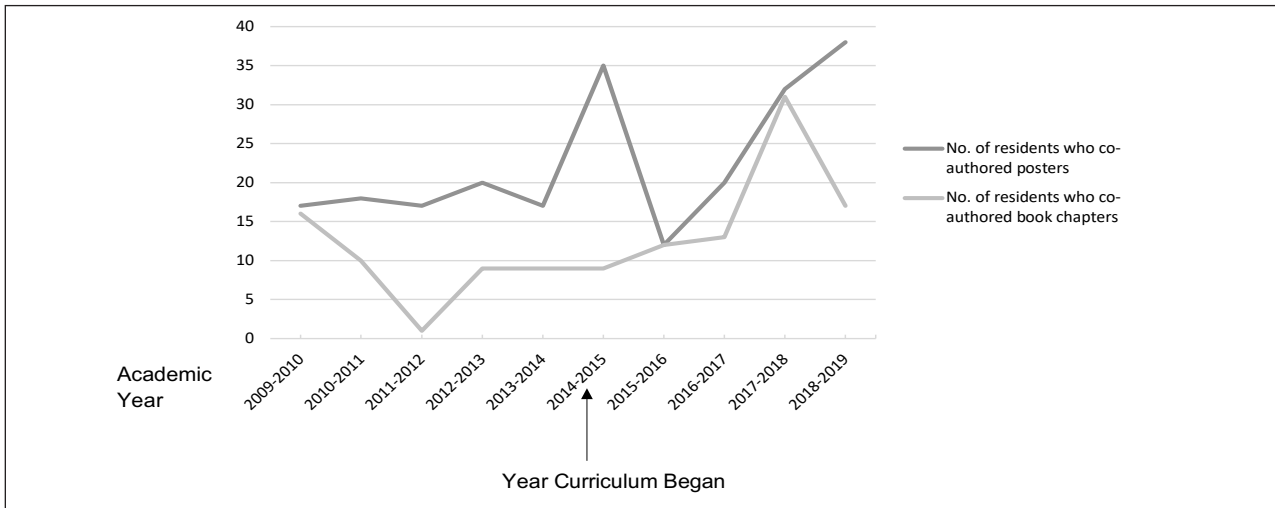
residents are already doing, and allowing the natural deadlines of research (eg, submission deadlines) to drive their efforts.

Our challenges are similar to other programs, including competing demands for residents' time, residents' uncertainty and limited experience with research and QI, limited number of faculty mentors, and variability in residents' commitment to research.<sup>17</sup>

### *Limitations*

While we observed an increase in resident scholarly activities, this project did not assess the curriculum's impact on resident knowledge of research and QI. Furthermore, factors other than the new curriculum may explain the increase in scholarship, for example, evolving resident/faculty characteristics and interests. This project is also limited by its narrow focus on just one

Figure 2: Resident Scholarly Activity Productivity Over Time



family medicine department. The curriculum may not be sustainable in other programs with different circumstances and resources.

Our scholarship curriculum is not a mere exercise for the residents; faculty members have noted that our residents are eager to undertake initiatives to improve the health of patients and community. Many projects had a clear impact on patient outcomes and our understanding of local underserved communities. Future goals include increasing journal article publications through enhanced training in writing and publication.

**ACKNOWLEDGMENTS:** The authors thank Dr James Tysinger and Dr Robert Ferrer for critically editing this article. The authors thank Dr Mark Nadeau, MD, MBA, their residency program director, for promoting a scholarship culture and encouraging resident scholarship through provision of resources. The authors thank Paula Winkler, MEd, director of South Central Area Health Education Center who mentors residents during their community medicine rotation.

**CORRESPONDING AUTHOR:** Address correspondence to Dr Tharani Ravi, 7703 Floyd Curl Drive, Mail Code 7794, San Antonio, TX 78229-3900. 210-567-4550. ravit@uthscsa.edu.

## References

1. Accreditation Council for Graduate Medical Education. ACGME Program Requirements for Graduate Medical Education in Family Medicine. [https://www.acgme.org/Portals/0/PFAssets/ProgramRequirements/120\\_FamilyMedicine\\_2020.pdf](https://www.acgme.org/Portals/0/PFAssets/ProgramRequirements/120_FamilyMedicine_2020.pdf). 2020. Accessed January 13, 2021.
2. Anandarajah G, Gupta P, Jain N, El Rayess F, Goldman R. Scholarly development for primary care residents. *Clin Teach*. 2016;13(6):415-421. doi:10.1111/tct.12463
3. Brown SR, Miser WF. Meeting scholarly activity requirements in a family medicine residency program. *Ann Fam Med*. 2017;15(5):487-488. doi:10.1370/afm.2130
4. Kohlwes J, O'Brien B, Stanley M, et al. Does Research Training During Residency Promote Scholarship and Influence Career Choice? A Cross-Sectional Analysis of a 10-Year Cohort of the UCSF-PRIME Internal Medicine Residency Program. *Teach Learn Med*. 2016;28(3):314-319. doi:10.1080/10401334.2016.1155460
5. Crawford P, Seehusen D. Scholarly activity in family medicine residency programs: a national survey. *Fam Med*. 2011;43(5):311-317.
6. DeHaven MJ, Wilson GR, O'Connor-Kettlestrings P. Creating a research culture: what we can learn from residencies that are successful in research. *Fam Med*. 1998;30(7):501-507.
7. Stevenson MD, Smigielski EM, Naifeh MM, Abramson EL, Todd C, Li ST. Increasing scholarly activity productivity during residency: a systematic review. *Acad Med*. 2017;92(2):250-266. doi:10.1097/ACM.0000000000001169
8. Wood W, McCollum J, Kukreja P, et al. Graduate medical education scholarly activities initiatives: a systematic review and meta-analysis. *BMC Med Educ*. 2018;18(1):318. doi:10.1186/s12909-018-1407-8
9. Ables AZ, Carek PJ, Dickerson LM, Abercrombie S, Hanlin RB. Promoting resident scholarship through a statewide symposium. *Fam Med*. 2010;42(6):440-443.
10. Carek PJ, Dickerson LM, Diaz VA, Steyer TE. Addressing the scholarly activity requirements for residents: one program's solution. *J Grad Med Educ*. 2011;3(3):379-382. doi:10.4300/JGME-D-10-00201.1
11. Lennon RP, Oberhofer AL, McNair V, Keck JW. Curriculum changes to increase research in a family medicine residency program. *Fam Med*. 2014;46(4):294-298.
12. Seales SM, Lennon RP, Sanchack K, Smith DK. Sustainable curriculum to increase scholarly activity in a family medicine residency. *Fam Med*. 2019;51(3):271-275. doi:10.22454/FamMed.2019.906164
13. Weaver SP; Increasing Residency Research Output While Cultivating Community Research Collaborations. Increasing Residency Research Output While Cultivating Community Research Collaborations. *Fam Med*. 2018;50(6):460-464. doi:10.22454/FamMed.2018.734196
14. Carek PJ, Mainous AG III. The state of resident research in family medicine: small but growing. *Ann Fam Med*. 2008;6(suppl 1):S2-S4. doi:10.1370/afm.779
15. Seehusen DA, Weaver SP. Resident research in family medicine: where are we now? *Fam Med*. 2009;41(9):663-668.
16. Smith M. Research in residency: do research curricula impact post-residency practice? *Fam Med*. 2005;37(5):322-327.
17. Ledford CJ, Seehusen DA, Villagran MM, Caferty LA, Childress MA. Resident scholarship expectations and experiences: sources of uncertainty as barriers to success. *J Grad Med Educ*. 2013;5(4):564-569. doi:10.4300/JGME-D-12-00280.1