

Faculty Scholarship at an Academic Health System

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Received: 20 Jul 2022; **Accepted:** 28 Aug 2022; **Published:** 02 Sep 2022

Citation: Jackson JB, Wendt L. Faculty Scholarship at an Academic Health System. J Med - Clin Res & Rev. 2022; 6(9): 1-5.

ABSTRACT

Objectives: To determine the number of published papers per faculty member and percent of faculty with published papers during the FY 21 academic year at an allopathic medical school stratified by department, academic rank, sex, and academic track.

Methods: Published papers from 449 tenure track faculty (351 males, 98 females) and 721 clinical track faculty (364 males, 357 females) were analyzed.

Findings: 71.0% of tenure track faculty (69.5% of males, 76.5% of females) and 32.3% of clinical track faculty (39.3% of males, 25.2% of females) published a first/last author paper, and 88.6% of tenure track faculty (88.6% of males, 88.8% of females) vs 54.9% of clinical track faculty (60.7% of males, 49.0% of females) published an authored paper. The percentage of faculty publishing at least one first/last author paper stratified by academic rank was 59.4%, 45.8%, and 37.9% for Professor (61.8% of males, 52.5% of females), Associate Professor (51.0% of males, 37.3% of females), and Assistant Professor (47.3% of males, 28.7% of females), respectively. For tenure track faculty, the median number of published first/last author papers and total number of papers by sex was 1 and 4 for males, while it was 1.5 and 4 for females. For clinical track faculty, the median number of published first/last author papers and total number of papers by sex was 0 and 1 for males, and 0 and 0 for females. The three departments with the highest percentage of faculty with published papers were Urology, Neurosurgery, and Microbiology/Immunology.

Conclusions: Tenure track faculty published more papers than clinical track faculty both in terms of quantity and in terms of percentage of faculty with authored papers. A greater percentage of male faculty published papers than female faculty in the clinical track but not the tenure track. Likewise, a greater percentage of faculty at higher academic ranks published papers.

Keywords

Clinical track, Medical faculty, Publications, Scholarship, Tenure track.

Introduction

Published peer reviewed scientific papers by faculty of medicine are important in the dissemination of existing knowledge for the purpose of education and in disseminating the generation of new knowledge (research) to report the advances in medicine. In many respects, published papers, especially if highly cited, are one of the

most important and valued activities in which a faculty member can be engaged and is typically rewarded with promotion, research funding, philanthropy and/or various honors. Many medical schools have a tenure track, which is typically focused more on research activity, and a separate clinical track(s) for faculty typically focused more on education or clinical related activity.

At the University Iowa Carver College of Medicine (CCOM), we have a tenure track and a clinical track. Approximately 38% of the faculty are in the tenure track and 62% in the clinical track. Faculty

in the tenure track achieve tenure when promoted to Associate Professor within a seven-year period. Faculty in the clinical track can be promoted up to full Professor, but there is no time period requirement within which to do so. There is a perception that a greater percentage of faculty in the tenure track publish papers and more papers than the percentage of clinical track faculty. Likewise, there may be a perception that a greater percentage of faculty at higher academic rank and a greater percentage of male faculty publish papers and more papers than do those faculty of lower academic rank and female faculty. In order to determine the number of published papers per faculty member and percent of faculty with published papers during the 2021 academic year, we analyzed the published papers by faculty member at CCOM stratified by department, academic rank, sex, and academic track (i.e. tenure track vs clinical track).

Methods

Peer-reviewed published papers during the FY 21 academic year (July 1, 2020-June 30, 2021) were retrieved from the Scopus citation database in which all college of medicine faculty are registered. All faculty were asked to check whether the list of papers authored by them for the 2021 academic year were complete and correct. First or last author papers were analyzed separately from any authored paper. Papers were only included in the analysis if the faculty member had been fulltime during the entire FY21 academic year. Only faculty with academic ranks of Assistant Professor, Associate Professor, and Professor in the tenure track or clinical track were included in the analysis. This group consist of 1170 faculty (449 tenure track faculty (351 males -78.2%, 98 females – 21.8%) and 721 clinical track faculty (364 males – 50.5%, 357 females – 49.5%). Approximately, 75% are physicians and 25% are PhD faculty. Categorical measures are summarized with counts and percentages, while continuous measures are summarized with medians and inter-quartile ranges. Fisher’s Exact Test was used to generate p-values, comparing the proportion of faculty who have published a first/last author paper between two groups.

The University of Iowa Institutional Review Board (IRB) review was obtained for this study. All methods were carried out in accordance with the IRB’s guidelines and regulations.

Results

Overall, 47.2% of faculty had published a first or last author paper and 67.9% had published an authored paper in FY 21 (Table 1). 71.0% of tenure track faculty (69.5% of males, 76.5% of females) and 32.3% of clinical track faculty (39.3% of males, 25.2% of females) published a first/last author paper, and 88.6% of tenure track faculty (88.6% of males, 88.8% of females) vs 54.9% of clinical track faculty (60.7% of males, 49.0% of females) published an authored paper (Tables 1-3).

The percentage of faculty publishing at least one first/last author paper stratified by academic rank was 59.4% for Professors (61.8% of males, 52.5% of females), 45.8% for Associate Professors (51.0% of males, 37.3% of females), and 37.9% for Assistant

Professors (47.3% of males, 28.7% of females). The percentage of faculty publishing at least one authored paper stratified by academic rank was 82.3% for Professors (84.2% of males, 76.8% of females), 67.2% for Associate Professors (67.4% of males, 66.7% of females), and 56.2% for Assistant Professors (68.3% of males, 44.3% of females) (Table 1).

The percentage of tenure track faculty publishing at least one first/last author paper stratified by academic rank was 71.7% for Professors (70.2% of males, 78.6% of females), 69.5% for Associate Professors (65.4% of males, 83.3% of females), and 71.2% for Assistant Professors (72.2% of males, 68.8% of females) (Table 2). The percentage of tenure track faculty publishing at least one authored paper stratified by academic rank was 91.2% for Professors (91.4% of males, 90.5% of females), 81% for Associate Professors (79% of males, 87.5% of females), and 90.4% for Assistant Professors (91.7% of males, 87.5% of females) (Table 2). For tenure track faculty, the median number of published first/last author papers and total number of papers by sex was 1 and 4 for males, while it was 1.5 and 4 for females.

The percentage of clinical track faculty publishing at least one first/last author paper stratified by academic rank was 38.9% for Professors (42.5% of males, 33.3% of females), 34.8% for Associate Professors (41.6% of males, 26.5% of females), and 28% for Assistant Professors (35.5% of males, 22.2% of females) (Table 3). The percentage of clinical track faculty publishing at least one authored paper stratified by academic rank was 67.4% for Professors (67.8% of males, 66.7% of females), 60.8% for Associate Professors (60% of males, 61.8% of females), and 46% for Assistant Professors (57.2% of males, 37.4% of females) (Table 3). For clinical track faculty, the median number of published first/last author papers and total number of papers by sex was 0 and 1 for males, while it was 0 and 0 for females (Table 3).

The 3 departments with the highest percentage of faculty with published papers were Urology, Neurosurgery, and Microbiology/Immunology, and the 3 lowest were Family Medicine, Emergency Medicine, and Anesthesia (Table 4).

Discussion

Our findings show that the percentage of tenure track faculty publishing either first or last author papers or any authored paper at our institution in the FY 21 year is approximately double that of clinical track faculty regardless in which of the 3 academic ranks. This finding is not surprising and consistent with findings in similar studies [1-3]. In the tenure track, publications are very important in order to receive grant funding, and achieve academic leadership positions and promotion within a given deadline of 6 years for non-clinical faculty and 8 years for clinical faculty. Our clinical track, on the other hand, does not have a deadline to achieve promotion, has less pressure to publish or obtain external grant funding, and has limited supported time for scholarship given clinical patient responsibilities. Within the tenure track and clinical track, faculty at higher academic rank had significantly

Table 1: Faculty Publications by rank and track.

Track	Rank	Number of Faculty	% with F/L paper	F/L Papers (IQR)	% With Any Paper	Total Papers (IQR)
Clinical	Assistant Prof	350	28%	0 (0, 1)	46%	0 (0, 2)
Tenure	Assistant Prof	104	71.2%	1 (0, 3)	90.4%	3.5 (2, 6.25)
Total	Assistant Prof	454	37.9%	0 (0, 1)	56.2%	1 (0, 3)
Clinical	Associate Prof	227	34.8%	0 (0, 1)	60.8%	1 (0, 3)
Tenure	Associate Prof	105	69.5%	1 (0, 3)	81%	3 (1, 7)
Total	Associate	332	45.8%	0 (0, 2)	67.2%	1.5 (0, 4)
Clinical	Professor	144	38.9%	0 (0, 1)	67.4%	1.5 (0, 3)
Tenure	Professor	240	71.7%	2 (0, 4)	91.2%	5 (2, 9)
Total	Professor	384	59.4%	1 (0, 3)	82.3%	3 (1, 7)
Clinical	Overall	721	32.3%	0 (0, 1)	54.9%	1 (0, 3)
Tenure	Overall	449	71.0%	1 (0, 3)	88.6%	4 (2, 8)
Total	Overall	1,170	47.2%	0 (0, 2)	67.9%	2 (0, 5)

F/L: First/last author.

Table 2: Tenure Track Faculty Publications by Rank and Sex.

Sex	Tenure Track	Number of Faculty	% with F/L paper	F/L Papers (IQR)	% With Any Paper	Total Papers (IQR)	P-Value
F	Assistant Prof	32	68.80%	1 (0, 2.25)	87.50%	2.5 (1, 4.25)	0.8154
M	Assistant Prof	72	72.20%	2 (0, 4)	91.70%	4 (2, 8)	
Total	Assistant Prof	104	71.20%	1 (0, 3)	90.40%	3.5 (2, 6.25)	
F	Associate Prof	24	83.30%	1.5 (1, 3)	87.50%	5 (2, 7)	0.1303
M	Associate Prof	81	65.40%	1 (0, 2)	79%	3 (1, 8)	
Total	Associate Prof	105	69.50%	1 (0, 3)	81%	3 (1, 7)	
F	Professor	42	78.60%	2 (1, 3.75)	90.50%	4.5 (2, 6.75)	0.3469
M	Professor	198	70.20%	1.5 (0, 4)	91.40%	5 (2, 9.75)	
Total	Professor	240	71.70%	2 (0, 4)	91.20%	5 (2, 9)	
F	Overall	98	76.50%	1.5 (1, 3)	88.80%	4 (2, 6)	0.208
M	Overall	351	69.50%	1 (0, 4)	88.60%	4 (2, 8.5)	

F/L- First/last author; P- Values are comparing Percent with First/Last Paper between sexes for each rank.

Table 3: Clinical Track Faculty Publications by Rank and Sex.

Sex	Clinical Track	Number of Faculty	% with F/L paper	F/L Papers (IQR)	% With Any Paper	Total Papers (IQR)	P-Value
F	Assistant Prof	198	22.20%	0 (0, 0)	37.40%	0 (0, 1)	0.0081
M	Assistant Prof	152	35.50%	0 (0, 1)	57.20%	1 (0, 2)	
Total	Assistant Prof	350	28%	0 (0, 1)	46%	0 (0, 2)	
F	Associate Prof	102	26.50%	0 (0, 1)	61.80%	1 (0, 2)	0.018
M	Associate Prof	125	41.60%	0 (0, 1)	60%	1 (0, 4)	
Total	Associate prof	227	34.80%	0 (0, 1)	60.80%	1 (0, 3)	
F	Professor	57	33.30%	0 (0, 1)	66.70%	1 (0, 3)	0.2979
M	Professor	87	42.50%	0 (0, 1)	67.80%	2 (0, 3.5)	
Total	Professor	144	38.90%	0 (0, 1)	67.40%	1.5 (0, 3)	
F	Overall	357	25.20%	0 (0, 1)	49.00%	0 (0, 2)	<0.0001
M	Overall	364	39.30%	0 (0, 1)	60.70%	1 (0, 3)	

F/L: First/last author; P-Values are comparing Percent with First/Last Paper between sexes for each rank.

more papers and a greater percentage of faculty publishing first or last papers or any authored paper. Given publications are a major factor in promotion in both tracks, this result is not surprising.

When evaluated by sex, there was no significant difference in percentage between male and female faculty on the tenure track in publishing either first/last author papers or any authored paper at any rank. There was, however, a significant difference between males and females in the clinical track with a greater percentage of male faculty than female faculty publishing first or last author

papers or any paper as an author at the Assistant and Associate Professor ranks. The reasons for the difference in publications between male and female faculty in the clinical track is likely multifactorial and is not a subject of this study. However, this difference likely explains in part the lower percentage of female faculty at the rank of Professor in the clinical track despite a majority of female faculty at the Assistant Professor rank. These results are consistent with other studies finding that female medical faculty publish less than their male counterparts [3,4].

Table 4: Faculty Publications by Department.

Department	Number of Faculty	% with F/L paper	FL Papers (IQR)	% With Any Paper	Total Papers (IQR)	Number of Tenure Track Faculty	Number of Female Tenure Track Faculty
Neurosurgery	11	90.90%	3 (1.5, 5.5)	100%	11 (8.5, 11)	10 (90.9%)	0 (0%)
Urology	15	86.70%	2 (1, 3.5)	100%	5 (3, 7.5)	6 (40%)	0 (0%)
Anatomy Cell Biology	14	85.70%	2 (1, 3)	92.90%	3 (2, 5.75)	14 (100%)	4 (28.6%)
Microbiology & Immunology	20	80%	2 (1, 2.25)	95%	3 (2, 5)	20 (100%)	8 (40%)
Molecular Dermatology	11	72.70%	1 (0.5, 2)	72.70%	2 (1, 3.5)	4 (36.4%)	2 (50%)
Physiology & Biophysics	17	70.60%	1 (0, 2)	94.10%	3 (2, 4)	17 (100%)	1 (5.9%)
Otolaryngology	17	64.70%	1 (0, 3)	88.20%	3 (1, 8)	12 (70.6%)	1 (8.3%)
Ophthalmology & Biochemistry	46	60.90%	1 (0, 2.75)	84.80%	4 (1, 7.75)	25 (54.3%)	2 (8%)
Molecular Biology	17	58.80%	1 (0, 1)	58.80%	1 (0, 2)	17 (100%)	6 (35.3%)
Neuroscience & Pharmacology	15	53.30%	1 (0, 2.5)	66.70%	2 (0, 5.5)	15 (100%)	2 (13.3%)
Neurology	39	51.30%	1 (0, 2.5)	66.70%	1 (0, 6.5)	14 (35.9%)	2 (14.3%)
Emergency Medicine	32	50%	0.5 (0, 1)	56.20%	1 (0, 2)	2 (6.2%)	1 (50%)
Pathology	50	50%	0.5 (0, 1.75)	78%	3 (1, 6)	21 (42%)	2 (9.5%)
Orthopedics	41	48.80%	0 (0, 2)	70.70%	3 (0, 6)	21 (51.2%)	1 (4.8%)
Ob/Gyn	47	46.80%	0 (0, 2)	66%	1 (0, 4)	6 (12.8%)	2 (33.3%)
Radiation Oncology	26	46.20%	0 (0, 1)	80.80%	4 (1.25, 6)	12 (46.2%)	3 (25%)
Surgery	59	45.8%	0 (0, 2)	76.30%	2 (1, 4)	17 (28.8%)	3 (17.6%)
Internal Medicine	287	44.9%	0 (0, 2)	67.60%	2 (0, 4)	109 (38%)	26 (23.9%)
Anesthesia	79	40.50%	0 (0, 1.5)	57%	1 (0, 2.5)	10 (12.7%)	2 (20%)
Radiology	48	39.60%	0 (0, 1)	72.90%	2 (0, 4.25)	19 (39.6%)	3 (15.8%)
Pediatrics	152	38.80%	0 (0, 1)	59.90%	1 (0, 4)	43 (28.3%)	15 (34.9%)
Psychiatry	73	35.60%	0 (0, 1)	58.90%	1 (0, 3)	30 (41.1%)	10 (33.3%)
Family Medicine	54	31.50%	0 (0, 1)	38.90%	0 (0, 1)	5 (9.3%)	2 (40%)

F/L: First/last author.

Departments with a higher percentage of tenure track faculty have a higher percentage of faculty publishing which is not unexpected given peer reviewed publications are a major criterion for promotion and important for competing for grant funding. It is not surprising that primary care specialties such as family medicine had the lowest publication rate and the lowest percent faculty in tenure track positions, and is consistent with lower scholarly productivity among clinical track faculty in primary care in another study [3].

The finding that the tenure track was associated with significantly higher publication productivity is consistent with several other studies [3,5,6]. Yet, the number of tenure track positions are decreasing relative to clinical track faculty positions partly due to the increasing clinical demands of academic health systems, internal funding needed for upfront protected faculty time, startup costs, the salary cap on National Institutes of Health grants, and the concern of needing to support faculty who at some point may become unproductive having achieved tenure.

Limitations of this study are that the data are only from one recent year from one medical school, and may not accurately reflect scholarly productivity across multiple years or at different institutions. However, the sample size was relatively large and captured all publications within the year as verified by the SCOPUS database and each faculty member. In addition, our study did not measure the impact of the scholarship, which may have been more meaningful as a comparison.

Scholarly productivity is one of the most important ways for medical school faculty to lead the advances in medicine and train future generations of health care professionals. Investing in the recruitment of more tenure track faculty and providing protected time for clinical faculty for academic activities related to their practice are options for increasing publication productivity. Also important is access to mentorship, support infrastructure, and protected time for both tenure track and clinical track faculty.

Acknowledgements

Funding for this project was from the Carver College of Medicine internal funds and the University of Iowa Institute for Clinical and Translational Science, which is granted, with Clinical and Translational Science Award funds from the National Institutes of Health (UL1TR002537).

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