RESEARCH

Publication Rates of Social and Administrative Sciences Pharmacy Faculty in Non-Research Intensive Pharmacy Schools

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Submitted December 19, 2016; accepted March 2, 2017; published April 2018.

Objective. To assess the level of publication rates from 2011 through 2015 by Social and Administrative Sciences (SAS) faculty at non-research intensive pharmacy schools.

Methods. The Web of Science database was searched using faculty names identified from the American Association of Colleges of Pharmacy (AACP) faculty and professional staff roster. Publication rates of SAS faculty were calculated and compared using several demographic subcategories such as public/private school, part of an academic health center, schools with PhD program, funding status, etc.

Results. The 208 SAS faculty members from 59 colleges contributed to 478 publications with a mean of 95.6 publications per year and 1.62 publications per institution per year. The number of publications increased 45% over the five years from 67 publications in 2011 to 122 in 2015.The average number of publications was 0.92 per year per SAS faculty compared to 0.82 publications per year per faculty from other basic pharmaceutical sciences divisions. The most commonly published research was research articles in the area of scholarship of teaching and learning. The significant predictors of publications were being part of an academic health center, having a PhD program, and higher percent of faculty members who are SAS faculty.

Conclusion. Despite being affiliated with institutions with missions less targeted on research, this study showed SAS faculty members at non-research intensive institutions consistently contribute to published literature. Further studies are needed to examine reasons for the lack of publishing by almost half of the SAS faculty and ways to increase research and publication in the field of SAS.

Keywords: publications, social and administrative pharmacy faculty, non-research intensive, colleges of pharmacy

INTRODUCTION

Pharmacy faculty members are expected to contribute to their respective institution and are evaluated for their performance in three distinct areas: service, teaching, and scholarship. The expectation that faculty members perform in each of these areas holds true for non-research intensive and research intensive pharmacy schools alike. The Accreditation Council for Pharmacy Education (ACPE) 2016 Guidance for the Accreditation Standards and Key Elements states that ". . .assessment of faculty members' abilities commonly involves. . . generation and dissemination of knowledge through research and other scholarly activities, including publications and presentations. . ."[1] It is clear that these expectations exist to increase the reputation of a college or university and enhance the educational experience of students. What may not be as clear to the faculty or even to their administrative supervisors is how to quantify scholarly expectations. Some institutions may base their publishing expectations on the previous year's publication rates. Other institutions may not have clearly defined goals for faculty, leaving faculty members at a loss to justify their current rate of publication without a benchmark for achievement.

The pharmacy school faculty comprises of basic pharmaceutical sciences faculty and pharmacy practice faculty. The publishing rates often vary between these two types of faculty. A difference in publishing rates can also be seen based on the research intensity at the institution. The Social and Administrative Sciences (SAS) faculty are often grouped with either basic sciences faculty or pharmacy practice faculty. In the pharmacy literature, there is a gap in understanding the publishing rates of SAS faculty in non-research intensive pharmacy schools in the United States. Bloom and colleagues examined the publishing rates of pharmaceutical science faculty members at non-research intensive pharmacy

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schools in the US.[2] However, SAS faculty members were excluded from this study.[2] Thompson and colleagues, in 2012, examined the publishing rates of basic pharmaceutical science faculty including SAS faculty, but in research-intensive pharmacy schools.[3] Chisholm-Burns and colleagues examined the publishing rates of pharmacy practice faculty while excluding SAS faculty.[4] Also, this study did not make the distinction between research intensive and non-research intensive pharmacy schools. While examining the publishing rates of pharmacy practice faculty at all pharmacy schools, Coleman and colleagues included SAS faculty.[5] However, that data is more than a decade old now and did not specifically report the publishing rates of SAS faculty. The purpose of this study was to assess the level of publication rates from 2011 through 2015 by SAS faculty at 59 non-research intensive pharmacy schools. The study results will aid administration and faculty members at non-research intensive pharmacy schools in determining a benchmark for SAS faculty publication expectations.

METHODS

This study focused only on non-research intensive pharmacy schools in the US between 2011 and 2015. Since Bloom and colleagues recently published on the publication rates for pharmaceutical science faculty at non-research intensive schools, this study used the same 59 schools reported by Bloom and colleagues (Table 1).[2] The criteria used to identify these schools are reported elsewhere.[2] The American Association of Colleges of Pharmacy (AACP) website and each school's independent websites were used to collect the demographic data for each of the eligible schools. The Web of Science (WOS) database was used to search for publications. Demographic information collected for each school in the study included: accreditation status, year of accreditation, private or public school, whether the school is part of an academic health center, total number of faculty, number of SAS faculty, whether the school has a PhD program, whether the school has a SAS PhD program, National Institute of Health (NIH) funding status, and other federal and private funding status.

Faculty members at the selected 59 schools were identified using the AACP faculty/professional staff roster current as of June 2016. Faculty members were filtered by discipline: social and administrative sciences. All other filters were left as "not selected." The faculty demographics collected included title, degree earned (PhD/PharmD/other), and any administrative title reported. SAS faculty names from eligible schools were submitted to the WOS database for a search of publications from January 2011 through December 2015. A single query

Table 1. US Pharmacy Schools Included in SAS Publication Analysis

Albany University
Belmont University
Butler University
California Northstate University
Campbell University
Chicago State University
Creighton University
Drake University
Duquesne University
East Tennessee State
Ferris State University
Florida A&M University
Hampton University
Harding University
Idaho State University
Lake Erie College of Osteopathic Medicine
Lipscomb University
Loma Linda University
Long Island University
MCPHS University – Worcester
MCPHS University – Boston
Mercer University
Midwestern University – Arizona
Midwestern University – Illinois
North Dakota State University
Northeast Ohio Medical University
Notre Dame University
Nova Southeastern University
Ohio Northern University
Pacific University Oregon
Palm Beach Atlantic University
Regis University
Roseman University
Shenandoah University
Samford University
South Dakota State University
South University
Southern Illinois University
Southwestern Oklahoma State
St. Louis College of Pharmacy
St. John's University (NY)
Sullivan University
Texas Southern University
Thomas Jefferson University
Touro University – New York
Touro University – California
University of Arkansas
University of Hawaii at Hilo
University of Louisiana Monroe
University of Montana
University of New England
University of the Pacific

(*Continued*)

Table 1. (*Continued*)

University of Puerto Rico
Union University
University of the Sciences in Philadelphia
Western University of Health Sciences
Wilkes University
Wingate University
Xavier University

was generated for each school using the faculty name as listed in the AACP faculty staff/professional roster (author-name), institution name (affiliation), the United States (affiliated country), and publication year (pub year). Results were manually verified by the primary author and another pharmacy student to ensure accuracy. Publication information collected included author name, publication title, journal title, impact factor of the journal, type of publication, year of publication, number of citations, and funding source for the study if reported. Publications by the authors were counted regardless of author order on the publication. Considering that benchmarks are individualized to faculty members, publications with multiple authors in one department were counted as a publication for each author.

Descriptive statistics (percentages and ranges) were calculated for the demographic information obtained. Demographic information was sorted into subcategories such as private vs public institution, presence vs absence of PhD program, presence vs absence of SAS PhD program, presence vs absence of an affiliation with an academic health center, NIH funding status, and degree earned by the faculty member. Publication rates per faculty were calculated and compared for each demographic subcategory. Rates for the various types of publication (abstracts, articles, editorials, letters, or reviews) identified by WOS were calculated for each school based on the average per faculty member over the 5-year span of time examined. Additionally, the number of citations for the publications were also examined. Multiple regression analysis was used to determine the significant factors that predict publishing rates for SAS faculty in non-research intensive institutions.

RESULTS

Each of the 59 pharmacy schools included had accreditation at the time of the study. Table 2 summarizes the demographic characteristics of the schools analyzed. The majority of the non-research intensive schools were private (73%), did not offer a PhD program (73%) and did not have an affiliation with an academic health center (81%). The years since initial accreditation ranged from 4 to 55 and the mean and standard deviation were 17 (12). Schools averaged 3.42 SAS faculty members per school with a range of 0-12 faculty members. While 35 schools (59%) had no reported NIH funding, 24 schools (41%) accounted for a total of $26,807,631 in NIH funding. NIH funding accounted for 60% of all funding reported. The source of funding for the publications, if reported, was 41% from NIH, 32% from the university, 24% from non-profit or non-NIH government agencies such as AACP, CDC, etc., and 28% from private funding such as industry grants. Table 3 describes the funding in detail.

Table 2. Demographics of Schools Identified as Non-Research Intensive for this Study

	n (%)
Years since school was established	
<5 years	4 (6.8)
5 to 10 years	16 (27.1)
11 to 20 years	20 (33.9)
20+ years	19 (32.2)
Public/Private	
Public	16 (27.1)
Private	43 (72.9)
Part of Academic Health Center	
Yes	11 (18.6)
No	48 (81.4)
Faculty	
Total # of faculty in the 59 schools	2998
Total # of SAS faculty in the 59 schools	208 (7)
Average # SAS faculty/school	3.42 (Range: 0 to 12)
Schools with zero SAS faculty	3 (5.1)
PhD offered	
Yes	16 (27.1)
No	43 (72.9)
SAS PhD offered	
Yes	4 (6.8)
No	55 (93.2)
NIH funding (2012)	
Yes	24 (40.7)
No	35 (59.3)
Other funding (2012)	
Yes	8 (13.6)
No	47 (79.9)

Table 3. Funding Status for the Schools Identified as Non-Research Intensive for this Study

	NIH	Federal	Private	Combined	NIH + Other Federal Funding	NIH + Private Funding	NIH + Private + Other Federal Funding
No. of schools	24	7	11	42	8	11	7
Total funding	$26,807,631	$8,871,340	$6,918,868	$45,672,451	$28,611,900	$25,461,539	$31,117,246
Mean funding/ school	$1,116,984.62	$1,267,334.29	$628,988	$1,087,439	$3,576,487.50	$2,314,685.36	$4,445,320.86

The AACP faculty/professional staff roster current as of June 2016 reported 2998 faculty members at the 59 identified pharmacy schools. The filter "social and administrative sciences" resulted in 208 SAS faculty. The percentage of SAS faculty who were either assistant or associate professors was approximately equal at 30% and 31% each, while 13% were professors. Approximately 15% of the SAS faculty held some form of administrative title. Seventy percent of the SAS faculty reported having a PhD degree.

The SAS faculty members contributed to a total of 478 publications from January 2011 through December 2015 with a mean of 95.6 publications per year and 1.62 publications per institution per year. The number of publications by SAS faculty members increased 45% over the five years from 67 publications in 2011, 93 in 2012, 94 in 2013, 102 in 2014, to 122 in 2015. Of the 208 SAS faculty, 102 did not report any publications during the five years. The number of publications per school ranged from 0 to 88 with a mean of 8 and median of 2.5. Sixteen schools (27%) reported no publications in the last five years. Of the 478 publications, SAS faculty with a PhD contributed 414 (87%) publications over the five years studied. SAS faculty with administrative titles contributed 45 publications (9%) in the 5-year period studied. Of the 106 published SAS faculty, individual members averaged 0.942 publications per year with a range from 1 to 25. The total number of citations for all the 478 publications was 2558, and it ranged from 0 to 145. The mean number of citations was 5.4, the standard deviation was 12.7, and the median number of citations was 2. Schools offering any PhD program excluding a SAS PhD published 0.61 publications per SAS faculty member per year. Those offering a SAS PhD program produced 0.67 publications per SAS faculty per year. When evaluating publication types, articles accounted for 362 of the 478 (76%) publications and abstracts accounted for 67 (14%). Other publication types included reviews (4%), editorials (3%), and letters to the editor (3%). Table 4 describes the most common journals in which SAS faculty published over the 5 years.

The number of publications from each school was modelled against years since accreditation, type of school (private vs public), part of an academic health center or not, percent of faculty who are SAS faculty, whether the school has a PhD program, funding status (has received funding vs has not), and total funding. The model was significant and explained 33.7% of the variance. The significant predictors of publications were being part of an academic health center, having a PhD program, and higher percent of faculty who are SAS faculty (Table 5).

Table 4. Most Common Journals for Publications

Journal	n (%)	Impact Factor
American Journal of Pharmaceutical Education	63 (13.2)	1.396
Research in Social & Administrative Pharmacy	39 (8.2)	1.86
Pharmacotherapy	36 (7.5)	2.42
Journal of the American Pharmacist Association	28 (5.9)	1.391
Pharmacoepidemiology and Drug Safety	20 (4.2)	3.123
American Journal of Health-Systems Pharmacist	10 (2.1)	1.942
Substance Use & Misuse	10 (2.1)	1.477
Pharmacoeconomics	8 (1.7)	2.623
Journal of Allergy and Clinical Immunology	7 (1.5)	11.476
Critical Care	6 (1.3)	5.406
Annals of Pharmacotherapy	5 (1.04)	2.189
Journal of Rural Health	5 (1.04)	1.801

Table 5. Multiple Regression Model That Explains the Number of Publications

	Regression Coefficient	*p*	95% CI
Years since accreditation	0.004	.99	(-0.39, 0.40)
Type of school (private vs public)	-3.85	.40	(-12.96, 5.26)
Part of an academic health center	16.97	.001	(7.46, 26.48)
Percent of SAS faculty	0.98	.039	(0.051, 1.91)
Having a PhD program	14.87	.017	(2.78, 26.97)
Having some kind of funding	-6.39	.25	(-17.40, 4.62)
Total funding	1.77E-6	.260	(0.000, 0.000)

DISCUSSION

Overall, there was a significant contribution from the SAS faculty from the non-research intensive institutions. Of the 106 published SAS faculty, the average number of publications was 0.942 per year per SAS faculty compared to 0.82 publications per year per faculty from other basic pharmaceutical sciences divisions as reported by Bloom and colleagues.[2] This finding is of further interest because the number of SAS faculty is only 208 compared to the 721 basic pharmaceutical sciences faculty as reported by Bloom from the same 59 schools. Also, as expected, the number of publications was much lower compared to those from research intensive institutions, which was 3.1 per year as reported by Thompson and colleagues.[3] Publication rates among SAS faculty almost doubled during the 5-year time span of the study. The impact factor of these journals varied with impact factors rating from 0.553-16.202.

The SAS faculty members holding a PhD contributed the majority of the publications at 87% compared to SAS faculty with a PharmD. This finding may be due to prior research training and experience and an increased expectation to publish for SAS faculty having a PhD. Also, the SAS faculty with a PharmD may experience high clinical workloads thus decreasing the amount of time available to engage in productive research. While only 7% of the schools offered a SAS PhD program, they accounted for about 17.6% of the total publications. The multiple regression analysis confirms this observation. Thus, more than funding status, it was infrastructure considerations such as the number of SAS faculty, presence of a PhD program, and affiliation with an academic health center that contributed to a higher number of publications.

Although almost half of SAS faculty members did not publish at all over the five years, the overall number of publications steadily increased each year over the 5-year study period. Of the 208 SAS faculty members identified, there were almost 100 publications released annually and 70% of these publications were full articles. However, the largest number of the publications (n=63) were in the Scholarship of Teaching and Learning (SOTL). A potential reason for this outcome may be the lack of funding resources for conducting SAS-related research, thus forcing SAS faculty to conduct SOTL research within the educational environment. Though this may provide good momentum for SOTL research in the pharmacy schools, further research is needed to identify the reason for this trend and its impact on the level of job satisfaction of SAS faculty and the effect, if any, on their quest for tenure and promotion. When funding was reported for each publication, NIH funding contributed to 41% of the publications, followed by the parent universities at 32%. Other major funding agencies were private funding such as industry grants (28%) and other extramural funding (24%). Further research is needed to identify the reasons why the publication rates of SAS-related articles were lower than for SOTL articles and why there was a complete lack of publishing by a large percentage of SAS faculty.

This study adds to the literature on publication rates by various pharmacy school faculty. Since SAS is a relatively smaller field by itself, it is often hard to determine the publication rates expected from a SAS faculty member, especially in a non-research intensive institution. The results from this study can be used by SAS faculty members for self-reflection to determine their own level of research productivity. School administration can use these results to evaluate the productivity of their faculty, establish benchmarks for achievement, determine the barriers faced by their SAS faculty in publishing and initiate remedial measures. The promotion and tenure committees can also use these results while evaluating SAS faculty without comparing them to either basic sciences or clinical sciences faculty.

There are limitations to this study. The AACP Faculty and Staff Roster was used to identify published SAS faculty members. When entered into the WOS database, variations in the author names were seen. To address this, similar names with and without initials were cross referenced with the year of publication and school affiliation to ensure the most accuracy possible. Even so, this leaves the possibility that eligible publications were not included and ineligible publications were identified as valid publications. Additionally, the search was only conducted through the WOS database. Thus, any publication that might not be captured by WOS was not included in this study.

CONCLUSION

Despite being affiliated with institutions having missions less targeted on research, this study showed social and administrative sciences faculty members at nonresearch intensive institutions making significant contributions to the published literature. Further studies are needed to examine the reasons for the lack of publishing in almost half of SAS faculty and ways to further increase research and publication in the field of SAS. The findings from this study can be a useful tool for administrators and promotion and tenure committees when communicating with social and administrative sciences faculty about their publishing trends.

ACKNOWLEDGMENTS

The authors acknowledge Dr. Tyler Rose for providing thoughtful comments and feedback on the manuscript and Kira Firzlaff for data collection.

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