A survey of osteopathic physician and student authorship in the dermatology literature

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To the Editor:

The residency merger of the American Osteopathic Association (AOA) and Accreditation Council of Graduate Medical Education (ACGME) was finalized in January 2020, standardizing national residency training amongst osteopathic (DO) and allopathic (MD) residents. Of the 538 dermatology residency positions offered in the 2020 match, DO student physicians matched into 41 (7.6%) positions [1]. Osteopathic dermatologists comprise 5.7% of practicing dermatologists [2]. Research experience and publications are valued in the evaluation of dermatology applicants [3]. With all training programs now meeting uniform standards, our study compares representation of osteopathic and allopathic dermatologists and students in the dermatology literature.

The top ten dermatology journals, ranked by 2019 H-index, were identified using similar methods to previous bibliometric studies [4]. Author degrees for published articles from January 2019 until summer 2020 on each journal's website were recorded by two independent reviewers. Journals without listed author degrees were excluded. Authors with undergraduate or master's degrees were surveyed for medical school affiliation and tabulated as either MD or DO medical students. The number of publications by DO authors and DO student authors were compared against the total number of publications and authors of that journal's articles for that year.

DO physicians and medical students combined constituted <1% of total authors across all journals (0.63% and 0.06%, respectively), whereas MD physicians (70.8%) and MD medical students (5.7%) had more substantial representation (Table1). Only 28/4709 (0.59%) of articles surveyed indicated a DO corresponding author compared to 81.5% with an MD corresponding author. The *American Journal of Dermatopathology* published the highest number of articles including a DO author (6.8% of articles) in 2019, whereas *Lasers in Surgery and Medicine* showed the highest proportion of DO authors for available 2020 articles (5.9%). Overall, DO representation was similar between 2019 and 2020 publications (**Table 1**).

Osteopathic dermatologists traditionally train and practice in rural and private practice clinical settings as opposed to academic centers [2]. This training characteristic may limit available research mentors and resources. Disproportionate research funding could contribute to the discrepancies as osteopathic medical campuses receive 800 times less NIH funding than allopathic medical campuses, likely related to the fact that many osteopathic campuses lack affiliated academic hospitals [5]. Only 2.8% of DO dermatologists practice in academic centers compared to 15.8% of MD dermatologists [2]. These factors may contribute to the low percentage of

osteopathic representation in dermatology literature, noting that our study is limited to top dermatologic journals with author credentials listed. Multiple international MD authors were identified, whereas osteopathic medicine is only formally taught in the United States.

Because rural and low-income areas are served heavily by osteopathic dermatologists [2], DOs have unique opportunities to provide valuable perspective to the field by authoring novel studies and literature about dermatologic care in underserved and rural communities. With standardization of residency training, there is hope that osteopathic dermatologist and student contributions will increase in future dermatology publications and trends should be examined in coming years. The standardization of the training can provide osteopaths with resources and mentors to help bridge the gap between DO and MD dermatologists research contributions [5].

Potential conflicts of interest

Dr. Dellavalle is a Joint Coordinating Editor for *Cochrane Skin*, a dermatology section editor for *UpToDate*, a Social Media Editor for the *Journal of the American Academy of Dermatology (JAAD)*, and a Podcast Editor for the *Journal of Investigative Dermatology (JID)*. He is a coordinating editor representative on *Cochrane* Council. Dr. Dellavalle receives editorial stipends (*JAAD, JID*), royalties (*UpToDate*), and expense reimbursement from *Cochrane Skin.*

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Table 1. *DO and MD student and physician author representation among articles in the top 10 dermatology journals for 2019 and 2020.*

Journal	Journal of the American Academy of Dermato-logy		JAMA Dermato-logy		Dermato-logic Surgery		Lasers in Surgery and Medicine		Wound Repair and Regenera-tion		Sexually Transmitted Diseases		Internatio-nal Journal of Dermato-logy		Clinics in Dermato-logy		Pediatric Dermato-logy		American Journal of Dermato-pathology		Total All Jour-nals	% Average All Jour-nals
Year	2019	2020	2019	2020	2019	2020	2019	2020	2019	2020	2019	2020	2019	2020	2019	2020	2019	2020	2019	2020	2019-2020	2019-2020
# Total Articles	714	523	326	166	344	236	61	34	70	63	175	136	402	344	90	49	296	211	278	191	4709	
# Articles including DO Author	9	18	4	1	18	6	1	2	0	1	0	3	4	5	1	0	9	3	19	9	113	
% Articles including DO Author	1.26	3.44	1.23	0.60	5.23	2.54	1.64	5.88	0.00	1.59	0.00	2.21	1.00	1.45	1.11	0.00	3.04	1.42	6.83	4.71	2.40	2.27
# Articles including DO Student Author	1	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	1	7	
% Articles including DO Student Author	0.14	0.19	0.00	0.60	0.00	0.00	1.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.72	0.52	0.15	0.19
# Articles including MD Author	705	512	309	159	333	231	55	31	45	43	146	100	373	322	85	48	284	202	263	179	4425	
% Articles including MD Author	98.74	97.90	94.79	95.78	96.80	97.88	90.16	91.18	64.29	68.25	83.43	73.53	92.79	93.60	94.44	97.96	95.95	95.73	94.60	93.72	93.97	90.58
# Articles including MD Student Author	204	156	84	40	48	49	6	6	5	6	5	6	41	41	22	16	94	56	34	40	959	
% Articles including MD Student Author	28.57	29.83	25.77	24.10	13.95	20.76	9.84	17.65	7.14	9.52	2.86	4.41	10.20	11.92	24.44	32.65	31.76	26.54	12.23	20.94	20.37	18.25

# Articles with DO Corresponding Author	3	4	3	0	6	0	0	0	0	0	0	2	1	1	1	0	2	0	4	1	28	
% Articles with DO Corresponding Author	0.42	0.76	0.92	0.00	1.74	0.00	0.00	0.00	0.00	0.00	0.00	1.47	0.25	0.29	1.11	0.00	0.68	0.00	1.44	0.52	0.59	0.48
# Articles with MD Corresponding Author	621	455	286	154	326	218	46	25	32	31	65	40	329	283	81	47	241	166	241	150	3837	
% Articles with MD Corresponding Author	86.97	87.00	87.73	92.77	94.77	92.37	75.41	73.53	45.71	49.21	37.14	29.41	81.84	82.27	90.00	95.92	81.42	78.67	86.69	78.53	81.48	76.37
# Total Authors	3814	2850	1636	1007	1372	1156	324	188	453	382	1143	900	1961	1658	248	148	1290	1068	1227	857	23682	
# DO Authors	11	25	4	1	22	21	1	2	0	1	0	3	4	8	1	0	13	3	20	9	149	
% DO Authors	0.29	0.88	0.24	0.10	1.60	1.82	0.31	1.06	0.00	0.26	0.00	0.33	0.20	0.48	0.40	0.00	1.01	0.28	1.63	1.05	0.63	0.60
# DO Student Authors	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	10	1	14	
% DO Student Authors	0.03	0.04	0.00	0.00	0.00	0.00	0.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.81	0.12	0.06	0.07
# MD Authors	2856	2158	1136	754	1108	940	189	117	151	130	354	241	1483	1339	188	118	978	872	987	673	16772	
% MD Authors	74.88	75.72	69.44	74.88	80.76	81.31	58.33	62.23	33.33	34.03	30.97	26.78	75.62	80.76	75.81	79.73	75.81	81.65	80.44	78.53	70.82	66.55
# MD Student Authors	300	223	131	66	61	46	10	10	15	13	9	11	52	60	38	26	116	74	48	41	1350	
% MD Student Authors	7.87	7.82	8.01	6.55	4.45	3.98	3.09	5.32	3.31	3.40	0.79	1.22	2.65	3.62	15.32	17.57	8.99	6.93	3.91	4.78	5.70	5.98