RISING DERM STARS® ABSTRACTS

The Ongoing Impact of COVID-19 on US Dermatology Practices

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INTRODUCTION

COVID-19 is significantly impacting healthcare delivery worldwide.[1] Chen et al anecdotally reported the impact on dermatology outpatient care at the outbreak epicenter in Wuhan, China, but nothing has yet been assessed for the US.[2] The purpose of this study was to determine the magnitude of the ongoing impact of COVID-19 on US dermatology outpatient care.

METHODS

After pre-validation, 2 surveys comparing outpatient volumes and scheduling issues for the weeks of February 17th versus the week of March 16th, 2020 (Survey 1) and April 13th, 2020 (Survey 2) and for estimation of trends in the next several weeks was emailed to 9,891 US Dermatologists on 3/21 (Survey 1) and 4/18 (Survey 2). Because of the importance of this information and the need for rapid dissemination, only data from the first 1,000 respondents (collected in the initial 36 hours) were included in each survey. In Survey 1, 30 responses were removed due to ineligible geography or errors in survey entry, leaving 970 for the analysis. Survey 2 consisted of 1,000 eligible respondents. Demographics (Table 1) representativeness with AAD membership was confirmed (Table 2). Statistical significance was calculated using chi-square, difference-of-proportions, and two-tailed independent t-tests.

RESULTS

COVID-19 impact was material (Table 3). From the 3rd week in February to the 3rd week in March to the 3rd week in April, the average number of patients seen fell from 149.4 to 63.4 to 28.2($p<0.0001$), practice days from 4.2 to 3.1 and then rose to 3.5($p<0.0001$) and biopsies from 19.8 to 7.7 to 3.5($p<0.0001$). Although by 3/16 there were only 24.5k cases nationally[3], the early-phase decrease in patient volume and office days suggests the magnitude of disease concern impact was greater than actual prevalence. Postponement of non-essential appointments increased from 35.5% to 79.4% to 95.6%($p<0.0001$). In Survey 1, 66.3% of respondents estimated a >50% decrease in patient volume in the coming 2 weeks (18.9% completely closing practices) and, disturbingly, 47.2% of respondents in the 2nd survey estimated an additional ≥50% decrease in patient volume in the next 2 weeks. 54.6% (Survey 1) of postponed appointments were for >4 weeks with an additional 25.4% not rescheduled.

Table 1. Participant Demographics by Survey Versus AAD US Membership Data.

Demographics (n=1000)	Survey 1 (%, 95% CI)	Survey 2 (%, 95% CI)	Survey 3 (%, 95% CI)	AAD US Membership*
Practice type				
Private	89.1 (87.1-91.1)	89.7 (87.8-91.6)	89.7 87.6-91.8)	
University/Academic/ Government	10.9 (8.9-12.9)	10.3 (8.4-12.2)	10.3 (8.2-12.4)	
Years of experience				
1-10	21.8 (19.1-24.5)	18.9 (16.4-21.4)	16.1 (13.6-18.6)	27.0%
11-20	26.6 (23.8-29.4)	25.7 (22.9-28.5)	22.3 (19.4-25.2)	27.5%
21-30	26.3 (23.5-29.1)	29.3 (26.4-32.2)	29.8 (26.6-33.0)	21.8%
> 30	25.4 (22.6-28.2)	26.1 (23.3-28.9)	31.7 (28.5-34.9)	23.7%
Practice mix				**AAD Practice Profile, 2017****
Medical	63.0 (59.9-66.1)	60.4 (57.3-63.5)	61.5 (58.1-64.9)	63%
Surgical/Oncology	26.7 (23.9-29.5)	25.8 (23.0-28.6)	23.2 (20.3-26.1)	25%
Cosmetic	14.8 (12.5-17.1)	11.5 (9.5-13.5)	12.9 (10.6-15.2)	12%
Dermatopathology	4.4 (3.1-5.7)	2.4 (1.4-3.4)	2.4 (1.3-3.5)	

*Source: American Academy of Dermatology. Practices mix/types not available.
**Source: Margosian E. Medical vs. cosmetic dermatology: Who is doing what?. Dermatology World.2019. http://digitaleditions.walsworthprintgroup.com/publication/?m=12468&i=552514&view=articleBrowser&article_id=3267519&search=practice%20profile&ver=html5. No data available for dermatopathology.

Table 2. Geographic and Practice Tenure Distribution of Survey Respondents versus American Academy of Dermatology US Membership

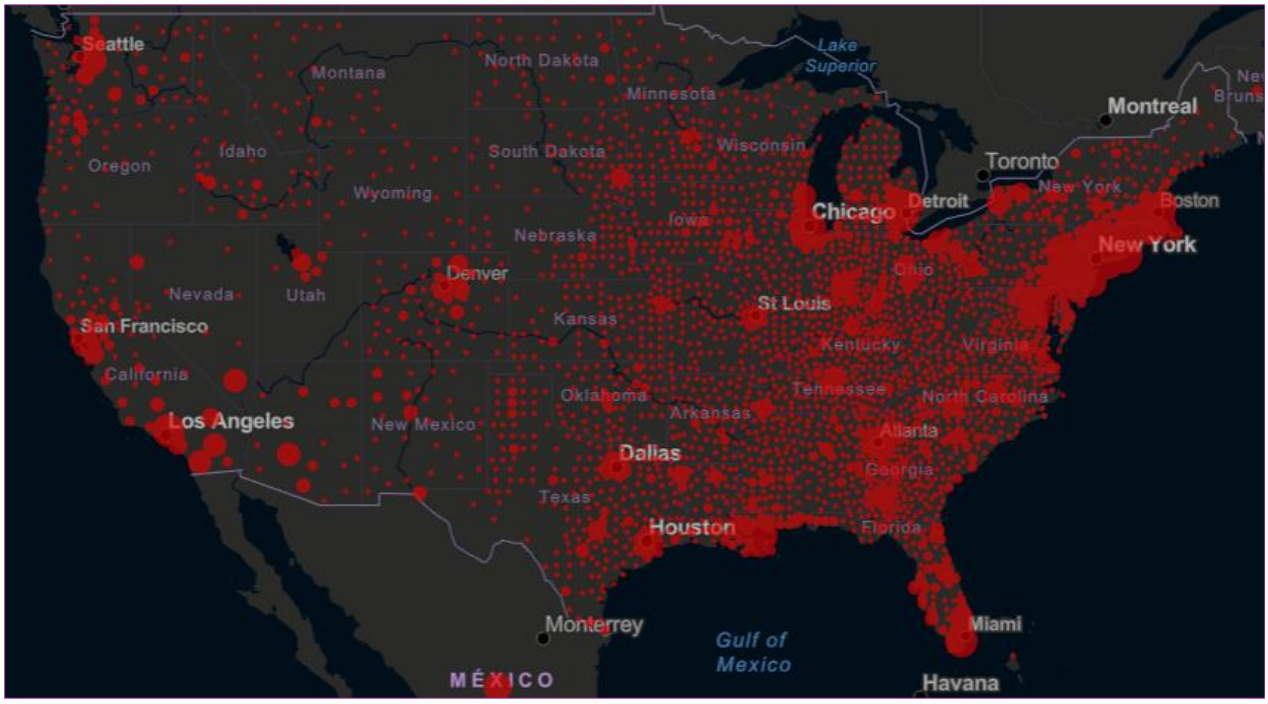
1st-digit zip (region) code	AAD US Membership (%)	9.6%	12.8%	10.3%	13.8%	8.3%
	Survey 1 (%)	9.4%	14.0%	11.0%	12.3%	7.6%
	Survey 2 (%)	8.4%	15.8%	10.9%	12.4%	8.6%
1st-digit zip (region) code	AAD US Membership (%)	4.8%	6.5%	10.0%	6.1%	17.1%
	Survey 1 (%)	3.9%	6.6%	10.0%	8.4%	16.3%
	Survey 2 (%)	4.2%	6.2%	8.7%	7.7%	16.5%

Table 3. Comparison of US Dermatology practice during February 17-21 versus March 16-20, April 13-18, and prospective practice estimates.

	Week of February 17, 2020	Week of March 16, 2020	Week of April 13, 2020	p-value
How many days did you practice? (mean; 95%CI)	4.18 (4.11-4.26)	3.08 (2.95-3.21)	3.50 (3.385-3.59)	<0.0001
How many patients were seen in your primary practice location? (mean; 95%CI)	149.74 (139.59-159.89)	63.50 (57.81-69.19)	28.24 (23.74-32.73)	<0.0001
How many biopsies did you perform for suspicious pigmented skin lesions? (mean; 95%CI)	19.86 (18.02-21.70)	7.75 (6.73-8.78)	3.55 (2.74-4.36)	<0.0001
Did you selectively postpone non-essential appointments? (%Yes; 95%CI)	35.42% (31.89% - 38.95%)	79.4% (76.01% - 82.51%)	95.6% (94.27% - 96.88%)	<0.0001
How many biopsies were postponed? (mean; 95%CI)	3.89 (3.06-4.73)	10.75 (9.19-12.31)	7.84 (6.62-9.05)	<0.0001

	Prospective Estimates	March 16-20	April 13-18
Relative to your practice during the week of March 16-20 (Survey 2: April 13-18; Survey 3: May 18-23), what do you anticipate your schedule for March 23-April 10 (Survey 2: April 20-May 10) will look like? (%; 95%CI)	**Similar schedule & patient load**	6.1%	38.5%
	0-25% reduction	8.3%	5.6%
	26-50% reduction	19.4%	8.7%
	51-75% reduction	13.3%	12.5%
	> 75% reduction (but still open)	34.1%	24.0%
	Completely closing practice	18.9%	10.7%
What percentage of appointments did you do using telemedicine (0-100%)? (%; 95%CI)	0%		20.1%
	10%		14.8%
	20%		7.0%
	30%		4.2%
	40%		2.5%
	50%		5.0%
	60%		2.9%
	70%		4.4%
	80%		7.0%
	90%		16.1%
	100%		16.0%
	Overall (mean)		48.6%
In the next month, what percentage of your patient visits will be done using telemedicine because of COVD-19? (mean; 95%CI)		37.8%	45.9%

Figure 1. Covid-19 Hotspots as of April 18, 2020.



Section Codes	Geographic Description	Section Codes	Geographic Description	Section Codes	Geographic Description	Section Codes	Geographic Description
018	Boston Metro Area	330	Miami Metro Area	780*	San Antonio, TX	919*	San Diego Metro Area
019		331		782		920	
021		333		786	Austin, TX	921	
024		334		787		922	
070-071	New York Metro Area	480	Detroit Metro Area	800	Denver Metro Area	923	
073*		481		801		925	
076		483		802		926	Los Angeles Metro Area
085*-086		600	Chicago Metro Area	804		928	
100-101*		601		816*	Eagle County, CO	940	San Francisco Bay Area
103		602		900	Los Angeles Metro Area	941	
104		604		901*		950	
105		605		902		951	
108*		606		904		956	Sacramento, CA
109		700*	New Orleans, LA	905		957	
110		701		906*		958	
112		750	Dallas Metro Area	907		980	Seattle Metro Area
113		752		908		981	
115		765*	Waco, TX	910		983	
117,119		766*		913			
302	Atlanta, GA	770	Houston Metro Area	914*			
303		774-775*		915			

*Survey 1 only.
Note: 36% (Survey 1) and 34% (Survey 2) of dermatologists (survey respondents) practiced in these high-density ("hotspot") disease areas

DISCUSSION

A greater negative impact was found in US "hotspot" regions[4] (36% (Survey 1) and 34% (Survey 2) of respondents-Figure 1) for week 3/16-20 for practice days (3.0 hotspots vs. 3.3 non-hotspots) and patients seen (56.2 in hotspots vs. 70.0 in non-hotspots); and for week 4/13-18 (3.4 in hotspots vs 3.5 in non-hotspots) and patients seen (25.3 in hotspots vs 29.7 in non-hotspots). No significant differing telemedicine usage (39.5% hotspots vs 37.2% non-hotspots) or practice closure (21.0% hotspots vs 17.6% non-hotspots) was found in Survey 1 (March); however, a significant difference in telemedicine usage (54.5% hotspots vs 45.5% non-hotspots) and practice closure (25.4% hotspots vs 16.4% non-hotspots, when compared to a typical April week) was found in Survey 2 (April). Mean estimated telemedicine visits overall for the next 2 weeks was 37.8% (Survey 1) and 45.9% (Survey 2). Academic/University/Institutional dermatologists were significantly more likely to use telemedicine (Survey 1=57.1%, Survey 2=68.6%) than private practitioners (Survey 1=35.5%, Survey 2=46.2%). Telemedicine usage was less likely for dermatologists with >30 practice years (>30=32.4% vs 40.0%) and this trend continued in April with only 37.2% of more experienced dermatologists using telemedicine. However, telemedicine usage does not have an impact on the deferred/postponed biopsies that had already occurred during the March (mean=10.7) or April (mean=7.9) weeks as well as those predicted to be subsequently postponed.

Limitations include that this study reflects a "snapshot" which could materially change given the dynamically evolving situation. Estimations could have led to recall bias and the 10.1% response rate could have introduced sampling and non-response bias. Those with lower work volumes could have been more likely to have time to respond, but this bias was minimized by weekend-only data collection. However, the large sample size and representative distribution mitigate selection bias and standard statistical testing demonstrated significance.

CONCLUSION

Our findings demonstrate the significant early impact of COVID-19 on US dermatologic care and can help better understand national trends. With an estimated 49.9 million annual US dermatology office visits[5], the 50%+ decrease in predicted visits could be devastating. Beyond telemedicine, other innovative approaches will need to be developed and implemented to help delivery of essential dermatology care during this crisis.

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