

Examining Trends in Dermatology Publications: A 10-Year Follow-up

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ABSTRACT

Introduction: Examining trends in adult and pediatric dermatology publications by Mimouni et al for 15 years (1993–2007) showed that there was a higher yearly increase in articles with higher level of evidence such as clinical and randomized controlled trials with a slower rise in articles with a lower level of evidence such as letters and case reports.¹ We wanted to see if trends in dermatology research have differed over the following 10 years (2008–2017).

Methods: We used the methodology of Mimouni et al to find the total number and categorization of publications in adult and pediatric dermatology from 2008 to 2017. We used MEDLINE to search the terms 'skin' AND 'disease' OR 'dermatology' for adults and pediatrics. A regression analysis (SAS 9.4) was used to understand the change in frequency across the years.

Results and Discussion: By analyzing publications from 2008 to 2017, speculations mentioned in Mimouni et al held true regarding the statistically significant increase in total number of publications in addition to meta-analyses and practice guidelines, which was not shown in the 1993–2007 analysis. The statistically significant increase previously mentioned in clinical trials, case reports, and pediatric randomized controlled trials was lost in the 2008–2017 data.

Conclusion: Trends in pediatric and adult dermatology publications in 2008–2017 differ from those identified in 1993–2007. There is a new significant increase in higher level of evidence not reported previously such as meta-analyses and practice guidelines. This is good for dermatology, and we hope the trend continues to further the specialty.

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INTRODUCTION

According to Mimouni et al, dermatology publication trends from 1993 to 2007 revealed a faster increase in high level of evidence studies such as clinical and randomized controlled trials, and a slower rise in articles providing low level of evidence such as case reports and letters.^{1,2} Mimouni et al speculated that the expansion of electronic resources and the internet revolution may create changes different than the trends reported.¹ They also speculated that the rise in clinical and randomized controlled trials reported in their study would lead to a rise in meta-analyses in the upcoming years.¹ We sought to evaluate if dermatology publication trends identified in 1993–2007 holds true for the next decade or if there are any changes. Examining these trends will aid dermatologists in understanding the evidence level of new publications and guiding researchers in areas where our field lacks.

MATERIALS AND METHODS

We followed the methodology of Mimouni et al to find the total number and categorization of publications in adult and pediatric dermatology. MEDLINE is a free service provided by the US National Library of Medicine that is commonly used in academia

to find medical literature.³ A MEDLINE search, <http://www.ncbi.nlm.nih.gov/>, of the keywords 'skin' AND 'disease' OR 'dermatology' from 1 January 2008 to 31 December 2017 was performed. Adult publications were determined by selecting 'all adults' (19 years and above) while pediatric publications were determined by selecting 'all child' (0–18 years). The search category was limited to 'humans' and to articles written in English. We also utilized MEDLINE's classification of articles into different categories such as clinical trials, editorials, letters, meta-analysis, practice guidelines, randomized controlled trials, reviews, case reports, and systematic reviews. A simple regression analysis using SAS version 9.4 (SAS Institute Inc., Cary, NC) was performed to analyze trends. A p-value of ≤ 0.05 was considered significant and a p-value of ≤ 0.10 was considered marginally significant.

RESULTS

From the years 2008 to 2017 there were 72,765 adult publications and 29,831 pediatric. Raw results obtained from MEDLINE for adult and pediatric dermatology publications along with the categorization are depicted in Tables 1 and 2.

TABLE 1.

Raw Data for Publications in Adult Dermatology from 2008–2017. Percentages (%) are in parentheses.										
Year	Total	Clinical Trials	Editorials	Letters	Meta-Analyses	Practice Guidelines	Randomized Controlled Trials	Reviews	Case Reports	Systematic Reviews
2008	5605	580 (10.3)	2 (0.0)	311 (5.5)	4 (0.1)	3 (0.1)	346 (6.2)	315 (5.6)	2461 (43.9)	45 (0.8)
2009	5809	594 (10.2)	6 (0.1)	320 (5.5)	6 (0.1)	3 (0.1)	371 (6.4)	327 (5.6)	2349 (40.4)	50 (0.9)
2010	5882	639 (10.9)	8 (0.1)	253 (4.3)	9 (0.2)	4 (0.1)	385 (6.5)	339 (5.8)	2280 (38.8)	52 (0.9)
2011	6340	668 (10.5)	2 (0.0)	270 (4.3)	17 (0.3)	8 (0.1)	385 (6.1)	362 (5.7)	2272 (35.8)	74 (1.2)
2012	6697	759 (11.3)	3 (0.0)	307 (4.6)	25 (0.4)	4 (0.1)	447 (6.7)	372 (5.6)	2353 (35.1)	79 (1.2)
2013	7699	780 (10.1)	3 (0.0)	791 (10.3)	27 (0.4)	3 (0.0)	483 (6.3)	408 (5.3)	2893 (37.6)	101 (1.3)
2014	8957	811 (9.1)	5 (0.1)	1438 (16.1)	17 (0.2)	4 (0.0)	520 (5.8)	453 (5.1)	3562 (39.8)	89 (1.0)
2015	9750	892 (9.1)	7 (0.1)	1504 (15.4)	46 (0.5)	2 (0.0)	605 (6.2)	531 (5.4)	3690 (37.8)	121 (1.2)
2016	9620	803 (8.3)	11 (0.1)	1329 (13.8)	53 (0.6)	5 (0.1)	551 (5.7)	481 (5.0)	3408 (35.4)	156 (1.6)
2017	6406	567 (8.9)	4 (0.1)	384 (6.0)	43 (0.7)	4 (0.1)	394 (6.2)	379 (5.9)	1958 (30.6)	144 (2.2)

TABLE 2.

Raw Data for Publications in Pediatric Dermatology from 2008–2017. Percentages (%) are in parentheses.										
Year	Total	Clinical Trials	Editorials	Letters	Meta-Analyses	Practice Guidelines	Randomized Controlled Trials	Reviews	Case Reports	Systematic Reviews
2008	2317	190 (8.2)	3 (0.1)	69 (3.0)	4 (0.2)	2 (0.1)	140 (6.0)	231 (10.0)	736 (31.8)	25 (1.1)
2009	2435	208 (8.5)	6 (0.2)	82 (3.4)	4 (0.2)	5 (0.2)	158 (6.5)	204 (8.4)	749 (30.8)	36 (1.5)
2010	2631	220 (8.4)	15 (0.6)	68 (2.6)	8 (0.3)	4 (0.2)	154 (5.9)	240 (9.1)	822 (31.2)	35 (1.3)
2011	2744	231 (8.4)	2 (0.1)	69 (2.5)	12 (0.4)	6 (0.2)	145 (5.3)	242 (8.8)	813 (29.6)	42 (1.5)
2012	2868	251 (8.8)	6 (0.2)	74 (2.6)	14 (0.5)	1 (0)	173 (6.0)	237 (8.3)	891 (31.1)	43 (1.5)
2013	3199	248 (7.8)	5 (0.2)	181 (5.7)	12 (0.4)	6 (0.2)	173 (5.4)	305 (9.5)	1009 (31.5)	62 (1.9)
2014	3610	260 (7.2)	9 (0.2)	369 (10.2)	11 (0.3)	4 (0.1)	185 (5.1)	294 (8.1)	1156 (32.0)	54 (1.5)
2015	3760	263 (7.0)	4 (0.1)	398 (10.6)	25 (0.7)	9 (0.2)	203 (5.4)	321 (8.5)	1157 (30.8)	79 (2.1)
2016	3678	242 (6.6)	5 (0.1)	356 (9.7)	34 (0.9)	9 (0.2)	181 (4.9)	317 (8.6)	1004 (27.3)	112 (3.0)
2017	2589	190 (7.3)	2 (0.1)	109 (4.2)	14 (0.5)	13 (0.5)	145 (5.6)	217 (8.4)	620 (23.9)	85 (3.3)

TABLE 3.

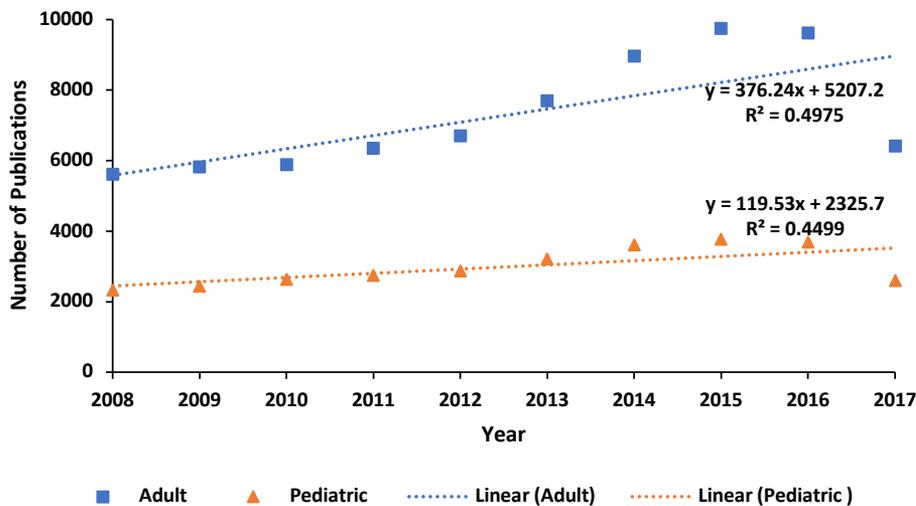
Statistical Analysis for Publications in Adult Dermatology from 2008–2017.			
Type of Study/Publication	r/rho/p	R ²	p-value
Total	0.7053	0.4975	0.0227*
Clinical Trials	0.4929	0.2429	0.1478
Editorials	0.3578	0.1280	0.3100
Letters	0.6218	0.3867	0.0549 #
Meta-Analyses	0.9121	0.8319	0.0002*
Practice Guidelines	0.0000	0.0000	1.0000
Randomized Controlled	0.6783	0.4600	0.0311*
Reviews	0.7549	0.5699	0.0116*
Case Reports	0.4241	0.1799	0.2219
Systematic Reviews	0.9587	0.9191	<.0001*

A statistically significant value of $P < 0.05$ is denoted by an asterisk symbol (*) while a marginally significant value of $P < 0.10$ is denoted by a dash (#) symbol.

TABLE 4.

Statistical Analysis for Publications in Pediatric Dermatology from 2008–2017.			
Type of Study/Publication	r/rho/p	R ²	p-value
Total	0.6708	0.4499	0.0337*
Clinical Trials	0.3616	0.1308	0.3045
Editorials	-0.2407	0.0579	0.5030
Letters	0.6453	0.4164	0.0439*
Meta-Analyses	0.7521	0.5656	0.0121*
Practice Guidelines	0.7688	0.5911	0.0094*
Randomized Controlled	0.5087	0.2588	0.1332
Reviews	0.5428	0.2946	0.1050
Case Reports	0.3606	0.1300	0.3061
Systematic Reviews	0.9062	0.8211	0.0003*

A statistically significant value of $P < 0.05$ is denoted by an asterisk symbol (*).

FIGURE 1. Correlation between the total number of adult and pediatric dermatology publications from 2008–2017.

For adult dermatology publication trends (Table 3), there was a significant increase in total number of publications ($R^2=0.4975$, $P=0.0227$), meta-analyses ($R^2=0.8319$, $P=0.0002$), randomized controlled trials ($R^2=0.4600$, $P=0.0311$), reviews ($R^2=0.5699$, $P=0.0116$) and systematic reviews ($R^2=0.9191$, $P<.0001$). For pediatric dermatology publication trends (Table 4), there was a significant increase in total number of publications ($R^2=0.4499$, $P=0.0337$), letters ($R^2=0.4164$, $P=0.0439$), meta-analyses ($R^2=0.5656$, $P=0.0121$), practice guidelines ($R^2=0.5911$, $P=0.0094$) and systematic reviews ($R^2=0.8211$, $P=0.0003$). By analyzing frequencies, case reports continue to make up the largest percentage of published data in dermatology; by summing up all publications across the years, case reports make up 37.4% of adult publications and 30% of pediatric publications. Figure 1 shows the correlation between the total number of adult and pediatric dermatology publications.

DISCUSSION

Mimouni et al examined trends in adult and pediatric dermatology publications for 15 years (1993–2007) and found that there was an increase in total number of publications, randomized controlled trials, clinical trials, case reports, and letters to the editors across the years.¹The regression analysis for meta-analyses, editorials, and practice guidelines in the original article was limited due to the low number of publications.¹ In comparing the quality of the published work, the fastest rate of increase reported in Mimouni et al was for publications with a higher level of evidence such as clinical trials and randomized controlled trials while articles with a lower level of evidence such as letters to the editors and case reports had a slower rate of increase or no change.¹

Our analysis for the next 10 years (2008–2017) showed a similar significant increase for both adult and pediatric dermatology in

the total number of publications. In adult dermatology, similar to what was found in Mimouni et al, there was a significant increase in randomized controlled trials. However, new trends include a significant increase in reviews, systematic reviews, and meta-analysis. In pediatric dermatology, new trends include the statistically significant increase in meta-analyses, practice guidelines, and systematic reviews. The statistically significant increase previously observed in 1993–2007 in clinical trials, case reports, and pediatric randomized controlled trials was lost in the 2008–2017 data. As was observed in Mimouni et al, case reports continued to make up the largest percentage of publications in 2008–2017. This may be attributed to the relatively low number of FDA-approved treatments for dermatologic conditions, necessitating the need for case reports to discover off-label therapeutic options. Further, case reports are necessary in understanding new disease entities or novel treatments and can serve to stimulate further research thus, our results confirm the utility of case reports in dermatology.

The field of dermatology has expanded for the last 25 years. Examining trends in adult and pediatric publications can help dermatologists understand the current state of research in the field. It can also aid in pointing researchers to areas that need further investigation and development, like pediatric randomized controlled trials. The increase in meta-analyses and practice guidelines is promising and we hope it continues to empower the field of dermatology.

Some limitations in this study include ones originally mentioned in Mimouni et al regarding the overlap between pediatric and adult publications that can't be differentiated in MEDLINE, the default categorization of MEDLINE that may not be accurate, and the inability of MEDLINE to include absolutely all articles in dermatology. As discussed in Mimouni et al, we do not

expect that these differences could have significantly impacted our analysis. The limited use of the keywords was a limitation mentioned in Mimouni et al that we did not work on expanding as we wanted to maintain our ability to compare our results to theirs. Finally, as MEDLINE is dynamic with articles being added periodically, we cannot compare the exact numbers in our study to that of Mimouni et al as the numbers would have differed by now; for example, at the time the study by Mimouni et al was analyzed, there were 910 adult publications with 26 randomized controlled trials in the search year 1993. Repeating the search criteria in June of 2018 for the year 1993 resulted in 2605 adult publications with 117 randomized controlled trials. The corresponding author of Mimouni et al was contacted to confirm our use of the correct search criteria as outlined in the methods section of the paper.

CONCLUSIONS

By analyzing the trends in adult and pediatric dermatology publications from 2008–2017, new trends have been found compared to the 1993–2007 analysis. The new statistically significant increase in higher level of evidence publications such as meta-analyses and practice guidelines is encouraging to the current state of research in the field of dermatology.

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DISCLOSURES

All authors declare no conflict of interest.

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