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Education

The Impact of Senior Author Profile on Publication Level of Evidence in *Plastic and Reconstructive Surgery*

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Background: *Plastic and Reconstructive Surgery (PRS)* incorporated the level of evidence (LOE) pyramid in 2011 to highlight evidence-based medicine in plastic surgery. This study aimed to assess the relationship between the profile of senior authors publishing in *PRS* and the LOE of publications.
Methods: All accepted publications by American senior authors to *PRS* between January 2018 and March 2020 were classified by LOE. Demographic, educational, and career data on all senior authors were collected using publicly available online resources.
Results: A total of 1030 articles were screened, of which 266 (25.8%) were eligible for LOE classification with the following distribution: I, 0.8%; II, 14.3%; III, 45.1%; IV, 33.1%; and V, 7.1%. Senior author demographic factors, including gender and race/ethnicity, did not significantly impact LOE ($P > 0.05$ for all). An advanced degree was associated with more publications per year, and only a PhD ($P = 0.022$) and board certification ($P = 0.012$) were associated with a higher LOE of publications ($P = 0.022$). Physicians working in an academic setting were significantly more likely to publish level III evidence than their private/community-based counterparts ($P = 0.006$). Breast papers constituted the highest proportion of level III evidence (41.4%; $P < 0.001$).
Conclusions: Most publications in *PRS* contain level III-IV evidence. Senior author gender, race, and ethnicity did not impact LOE of publications. Plastic surgery board certification, possession of a PhD, and academic practice setting were associated with higher LOE of publications. *(Plast Reconstr Surg Glob Open 2022;10:e4506; doi: 10.1097/GOX.0000000000004506; Published online 30 September 2022.)*

INTRODUCTION

The basis for evidence-based medicine (EBM) rests on the integration of individual clinical experience and high-quality external evidence into practice.[1] When done correctly, adaptation of EBM leads to reductions in morbidity and healthcare costs and improvement in patient satisfaction.[2] EBM in plastic surgery can be measured by level of evidence (LOE), a metric that offers an objective assessment of the methodologic quality of a study. LOE is graded on a scale of I–V, with level I representing randomized controlled trials (RCTs) and level V representing expert opinion or case reports (Table 1).

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On January 1, 2011, *Plastic and Reconstructive Surgery (PRS)* published its inaugural edition incorporating an evidence-based initiative for the specialty.[3] With the goal of creating a visible way of promoting and advancing EBM, *PRS* began publishing a clear indication of LOE and the question addressed by an article (diagnostic, therapeutic, or risk).[4]

Since 2011, plastic surgery has seen notable growth in its EBM-focused research, with plastic surgery journals now including studies with higher LOE and increased incorporation of EBM into residency program curricula, continuing medical education, and national conferences.[5] Since 2008, the percentage of high LOE publications in *PRS* (levels I and II) has increased significantly from 6.6% to 15.7%.[5] Nevertheless, plastic surgery and the surgical specialties, in general, have been slower to integrate EBM relative to our nonsurgical colleagues.[6] The explanation for this gap is multifactorial, but can be summarized by the difficulty in applying more sophisticated study designs to clinical questions in surgery.[7]

Not every question can be answered by high LOE investigations[7] and most of plastic surgery's landmark

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papers would be considered "low LOE" case series and expert opinions.[8,9] This is explained in part by the high costs of surgical interventions, difficulties in enrolling surgical patients in a placebo control, and the subjective nature of outcomes. It is hard to justify randomizing patients to an investigative arm when a surgeon has had positive experiences with the control group technique.[7] Moreover, the successful execution of high LOE research is largely resource dependent,[10,11] with intellectual and financial capital each playing a role in question generation and execution. Given the increased emphasis of LOE in the plastic surgery literature, this study aimed to describe the landscape of publications in *PRS*, characterizing the demographic, educational, and academic profile of senior authors and assessing their impact on the LOE of publications.

Takeaways

Question: How do demographic, educational, and career factors impact quantity and level of evidence of publications in *Plastic and Reconstructive Surgery?*

Findings: Most publications in *PRS* contain level III-IV evidence. Senior author gender, race, and ethnicity did not impact level of evidence of publications. Plastic surgery board certification, possession of a PhD, and academic practice setting were significantly associated with higher level of evidence of publications.

Meaning: If we as a specialty wish to continue increasing the level of evidence of our research, consideration of the value of advanced degrees, especially a PhD, and an academic setting with ample training, resources, and support is beneficial.

METHODS

All articles accepted to *PRS* between January 2018 and September 2021 were assessed, with the timeframe guided by data available to the authors. *PRS* was the sole journal evaluated as it is the highest impact factor plastic surgery journal, publishing on a wide variety of plastic surgery topics. After determining American location of practice, the senior authorship on each article was assessed for demographic, educational, and academic characteristics.

Demographic Evaluation

Gender of the senior author was evaluated using https://gender-api.com/en/excel,[12] a free online software that determines gender based on first and last name along with an estimate of accuracy. Estimates less than 90% were verified manually. Images available on professional websites were used to verify gender during the race/ethnicity determination process.

Race/Ethnicity Determination

Race and ethnicity were primarily determined by speaker surname and online photograph using an independent two-rater evaluation. This method combines the strategies used by multiple previous studies evaluating race and ethnicity.[13–15] The authors used an online image search query to identify a link to each speaker's photograph. This link was accessed by two evaluators, who determined the speaker's race and/or ethnicity in a blinded fashion. Following individual determination of race/ethnicity, evaluator results were compared, and any discrepancies were decided upon by a third evaluator. When possible, confirmation of race/ethnicity was made through self-reports, online articles, or social media. Interrater reliability of race/ethnicity evaluation was assessed using the Kappa coefficient.

Academic Productivity Determination

Commonly used metrics of academic productivity were used, including h-index, number of PubMed publications, and amount of NIH funding. Senior author's h-index was evaluated using Google Scholar. PubMed was queried using the senior author's "first name, last name" with inclusion of a middle initial when available. Total number of publications and the year of first indexed publication were recorded and used to calculate PubMed publications per year through 2021. The NIH RePORTER database was queried using the senior author's first name and last name, and total dollar amount of funding was recorded.

Training and Practice Characteristics

Each senior author's educational profile was abstracted from professional websites, including fellowship training, nature of practice (academic, private, mixed academic, and private), and academic title when appropriate. The 2022 U.S. News Research ranking of authors at academic institutions was recorded.

Level of Evidence Evaluation

Papers initially submitted through March 2020 were available through PubMed for LOE evaluation as those submitted after the fact were not consistently published online as of March 2022. Study methodology (eg, case series and retrospective reviews), *PRS* section, LOE, and the type of clinical question addressed were collected from each ratable publication. The determination of a

Table 1. American Society of Plastic Surgeons Rating LOEs and Grading Recommendations: Evidence Rating Scale

Level of Evidence	Qualifying Studies
I	High-quality, multicenter or single-center RCT with adequate power, or systematic review of these studies
II	Lesser-quality RCT, prospective cohort or comparative study, or systematic review of these studies
III	Retrospective cohort or comparative study, case-control study, or systematic review of these studies
IV	Case series with pretest/posttest or only posttest
V	Expert opinion developed via consensus process; case report of clinical example; or evidence based on physiology, bench research, or "first principles"

"ratable" publication was based on whether the *PRS* LOE pyramid appeared on the first page of each article or was stated at the end of the abstract. Included alongside the LOE was the "type of clinical question addressed" (diagnostic, therapeutic, and risk). Study methodology was collected from the abstract and/or methods section of the article. In the case of multiple ratable publications per author, the highest LOE study was used in analyses. According to *PRS*, "the final LOE grade for accepted papers will be determined and assigned by the independent panel of LOE experts."[16]

Analysis

Central tendency was reported using mean and standard deviation. One-way analysis of variance (ANOVA) or independent samples *t* tests were used for normal continuous variables, while Kruskal-Wallis test or Mann-Whitney tests were used to assess nonparametric variables. Chi-square or Fisher exact tests were used to compare nominal and ordinal variables between subgroups. Tukey's test and adjusted standardized ratios were used for posthoc testing. *P* values were all two-tailed, and significance was set at α less than 0.05 level. Statistical analysis was conducted on SPSS v.27 (IBM Corporation). This investigation was deemed exempt from institutional review board review by the Children's Hospital of Philadelphia.

RESULTS

Senior Author Demographic Characteristics

A total of 1964 unique senior authors published in *PRS* between January 2018 and September 2021. Nearly half of these authors were US-based (n = 959; 48.8%). Non-US-based senior authors were not assessed in-depth due to the lack of available, reliable data. Authors were majority male (78.2%), White/Caucasian (72.9%), and non-Hispanic (95.0%) (Table 2). Subgroup analysis by gender revealed that male senior authors had more publications per year than their female counterparts (3.8 versus 2.9; $P = 0.012$). No significant difference in publications per year emerged based on racial or ethnic minority status ($P > 0.05$ for both).

Assessment of interrater reliability of race/ethnicity yielded values of $k = 0.954$ for race and $k = 0.840$ for ethnicity ($P < 0.001$ for both), corresponding to almost perfect ($k > 0.90$) and strong ($k = 0.80 – 0.90$) agreement, respectively.[17]

Educational and Practice Characteristics

Seventy-seven percent of authors were residency- or fellowship-trained plastic surgeons, of whom 78.1% were board certified in plastic surgery. General surgeons, orthopedists, and dedicated researchers each comprised approximately 4% of senior authors, with no significant change in the proportion of plastic surgeon senior authors over time ($P = 0.442$). The distribution of academic ranking of senior authors is shown in Figure 1.

Ninety-two percent of senior authors had an MD degree, with 21.8% possessing two advanced degrees and 1.3% possessing three advanced degrees. Authors with more than one advanced degree had more publications per year (4.6 versus 3.4; $P < 0.001$) and a higher h-index (12.8 versus 6.1; $P < 0.001$). Furthermore, those with more than one graduate degree were more likely to be practicing in academics, whereas those with an MD alone were more likely to be in private/community-based practice ($P = 0.002$). Moreover, academic senior authors had more publications per year than their nonacademic counterparts (3.8 versus 3.3; $P < 0.001$). There was no significant difference in academic institutional ranking based on the number of degrees ($P = 0.454$).

Plastic surgeons had more PubMed indexed publications per year (4.0 versus 2.2; $P < 0.001$) than other specialists. Analysis by fellowship training revealed that pediatric/craniofacial surgeons had more publications than nonplastic surgeons ($P = 0.013$) and plastic surgeons without any fellowship training ($P = 0.005$). This relationship was nonsignificant for all other fellowships ($P > 0.05$ for all).

Level of Evidence

A total of 1030 articles were available for LOE screening of which 266 (25.8%) contained an LOE classification. Twenty-eight percent (n = 75) of these papers belonged to authors with more than one ratable publication. The distribution of LOE was as follows: I, 0.8%; II, 14.3%; III, 45.1%; IV, 33.1%; and V, 7.1%. The most common type of clinical question addressed was therapeutic (71.8%), followed by risk (7.5%) and diagnostic (20.7%).

The *PRS* sections containing the highest proportion of ratable publications were Breast (n = 94; 67.1%), Pediatric/Craniofacial (n = 47; 65.3%), and Hand/Peripheral Nerve (n = 28; 51.9%) (Fig. 2). Most nonratable publications were replies or letters to the editor (n = 139; 18.2%), discussions (n = 134; 17.5%), or viewpoints (n = 83; 10.9%).

There Was No Impact of Senior Author's Gender, Race/Ethnicity, or Academic Title on LOE ($P > 0.05$ Both)

The number of degrees possessed by the senior author did not impact publication LOE ($P = 0.098$); however, possessing a PhD was associated with a higher LOE of publications ($P = 0.022$). Board-certified plastic surgeons were more likely to have published level III evidence papers than their nonboard-certified counterparts ($P = 0.012$). Furthermore, academic physicians were more likely to publish level III evidence than their private/community-based counterparts ($P = 0.006$) who were more likely to publish level V evidence ($P = 0.029$).

There was no significant difference in LOE of publications by senior author's h-index ($P = 0.147$), PubMed publications per year ($P = 0.639$), or amount of NIH funding ($P = 0.302$). Additionally, US News Ranking in Research was not significantly associated with LOE ($P = 0.575$) of papers from academic centers; however, 34.6% of level II papers and 37.4% of level III papers came from the top ten highest ranked institutions.

Breast papers constituted a higher proportion with level III evidence ($P < 0.001$; 41.4%) than the other sections

Table 2. Senior Author Demographics and Educational Characteristics

Characteristics	n (%)	I	II	III	IV	V	*P*
	Total Sample = 951	LOE = 266 Gross, 191 Unique					
Gender							
Men	764 (78.2)	1 (100)	21 (87.5)	70 (79.5)	52 (81.3)	10 (90.9)	.794
Women	187 (19.1)	0 (0)	3 (12.5)	18 (20.5)	12 (18.8)	1 (9.1)	
Race							
White/Caucasian	722 (73.9)	1 (100)	18 (72.0)	60 (66.7)	47 (73.4)	8 (72.7)	.391
Black/African American	20 (2.0)	0 (0)	2 (8.0)	2 (2.2)	0 (0)	4 (2.1)	
Asian Pacific Islander	208 (21.3)	0 (0)	5 (20.0)	28 (31.1)	14 (21.9)	3 (27.3)	
Mixed race	9 (0.9)	0 (0)	0 (0)	0 (0)	3 (4.7)	0 (0)	
Ethnicity							
Non-Hispanic	928 (95.0)	1 (100)	25 (100)	88 (97.8)	63 (98.4)	10 (90.9)	.512
Hispanic	31 (3.2)	0 (0)	0 (0)	2 (2.2)	1 (1.6)	1 (9.1)	
Plastic surgeon	747 (76.5)	0 (0)	14 (56.0)	78 (86.7)	54 (84.4)	10 (90.9)	.001*
Degree							
MD only	676 (69.2)	0 (0)	18 (72.0)	67 (74.4)	53 (84.1)	9 (81.8)	.604
MD plus one degree	191 (19.5)	1 (100)	5 (20.0)	20 (22.2)	8 (12.7)	2 (18.2)	
MD plus two degrees	11 (1.1)	0 (0)	1 (4.0)	1 (1.1)	0 (0)	0 (0)	
Non-MD	74 (7.6)	0 (0)	1 (4.0)	2 (2.2)	2 (3.2)	0 (0)	
MD status	881 (90.2)	1 (100)	24 (96.0)	87 (96.7)	61 (95.3)	11 (100)	.954
No. PubMed publications (No.)	48.8±63.9 (0 – 638.0)	10.0	61.9±64.8	60.3±54.1	48.5±49.7	62.5±70.8	.584
PubMed publications per year	3.6±3.9 (0 – 35.6)	1.3	4.1±3.4	4.1±3.3	3.1±2.7	3.4±3.5	.329
H-index	8.0±17.9 (0 – 137)	31.0	7.8±17.8	10.3±17.8	4.3±9.8	16.9±27.2	.039*
Fellowship							
None	175 (17.9)	1 (100)	6 (24.0)	16 (19.3)	21 (33.9)	3 (27.3)	.196
Hand/peripheral nerve/upper extremity	140 (14.3)	0 (0)	6 (24.0)	13 (15.7)	8 (12.9)	4 (36.4)	
Reconstructive microsurgery	125 (12.8)	0 (0)	3 (12.0)	20 (24.1)	9 (14.5)	1 (9.1)	
Breast	16 (1.6)	0 (0)	0 (0)	2 (2.4)	1 (1.6)	0 (0)	
Pediatric/cleft/craniofacial	118 (12.1)	0 (0)	2 (8.0)	17 (20.5)	9 (14.5)	1 (9.1)	
Aesthetic/cosmetic	34 (3.5)	0 (0)	0 (0)	2 (2.4)	4 (6.5)	1 (9.1)	
Gender affirming/urologic reconstruction	7 (0.7)	0 (0)	0(0)	0 (0)	0(0)	0 (0)	
Burn	5 (0.5)	0 (0)	0 (0)	3 (3.6)	0 (0)	0 (0)	
Oculoplastic	6 (0.6)	0 (0)	0 (0)	0 (0)	0(0)	0 (0)	
Multiple fellowships	56 (5.7)	0 (0)	0 (0)	6 (7.2)	3 (4.8)	0 (0)	
Non-*PRS* fellowship	20 (27.4)	0 (0)	8 (32.0)	4 (4.8)	7 (11.3)	1 (9.1)	
NIH Funding ($)	412,236±2,698,543	489k	258k ± 680k	64k ± 322k	145k ± 786k	0	<.001†
ABPS certification	616 (63.1)	0 0 (0)	13 (52.0)	72 (80.0)	41 (65.1)	8 (72.7)	.023*
Practice setting							
Academic	690 (70.6)	1 (100)	19 (76.0)	76 (84.4)	42 (65.5)	6 (54.5)	.019*
Private/community	158 (16.2)	0 (0)	3 (12.0)	8 (8.9)	13 (20.3)	3 (27.3)	
Both	103 (10.5)	0 (0)	2 (8.0)	6 (6.7)	8 (12.5)	2 (18.2)	
Academic title							
Medical student	12 (1.2)	0 (0)	0 (0)	0 (0)	1 (1.6)	0 (0)	.660
Resident	38 (3.9)	0 (0)	1 (4.0)	1 (1.1)	1 (1.6)	0 (0)	
Clinical fellow	11 (1.1)	0 (0)	0 (0)	0 (0)	1 (1.6)	0 (0)	
Assistant professor	143 (14.6)	0 (0)	4 (16.0)	13 (14.4)	3 (4.7)	1 (9.1)	
Associate professor	196 (20.1)	0 (0)	7 (28.0)	31 (34.4)	18 (28.1)	2 (18.2)	
Professor	221 (22.6)	1 (100)	3 (12.0)	16 (17.8)	17 (26.6)	3 (27.3)	
Vice chair	3 (0.3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	
Chief/chair/director	108 (11.1)	0 (0)	3 (12.0)	18 (20.0)	7 (10.9)	2 (18.2)	
Nonacademic	206 (22.1)	0 (0)	6 (25.0)	8 (9.1)	15 (24.2)	3 (27.3)	
US News medical institution ranking							
Nonacademic	177 (18.1)	0 (0)	4 (17.4)	9 (10.2)	16 (25.4)	2 (18.2)	.127
Top 20	382 (39.1)	0 (0)	15 (65.2)	47 (53.4)	22 (34.9)	6 (54.5)	
21–50	245 (25.1)	0 (0)	3 (13.0)	23 (26.1)	18 (28.6)	2 (18.2)	
51+	98 (10.0)	1 (100)	1 (4.3)	8 (9.1)	7 (11.1)	1 (9.1)	

ABPS indicates American Board of Plastic Surgery.

* *P* value is significant at $p < 0.05$

† *P* value is significant at $p < 0.001$

(Fig. 3). Pediatric/Craniofacial papers were most represented by level III evidence (29.2%), while Reconstructive papers were most represented by level IV evidence (24.8%). The only level I evidence papers were published in the Pediatric/Craniofacial[18] and Cosmetic sections.[19]

DISCUSSION

Since its integration into *PRS* in 2011, the LOE system has aimed to guide clinicians toward the appropriate use of available evidence derived from systematic research. Additionally, the methodologic quality and relevance of published studies are the primary factors promoting their citation and affecting the impact factor of a journal,[20] providing an additional incentive for the promotion of high-quality, high LOE research.

Publications are a principal form of currency in academia, with quality and quantity of research playing a critical role in academic promotion and notoriety.[21] The authors sought to generate a demographic and academic profile of senior authors publishing in plastic surgery's highest impact journal, *PRS*, and characterize the nature of their research. Quantity of research, male gender,

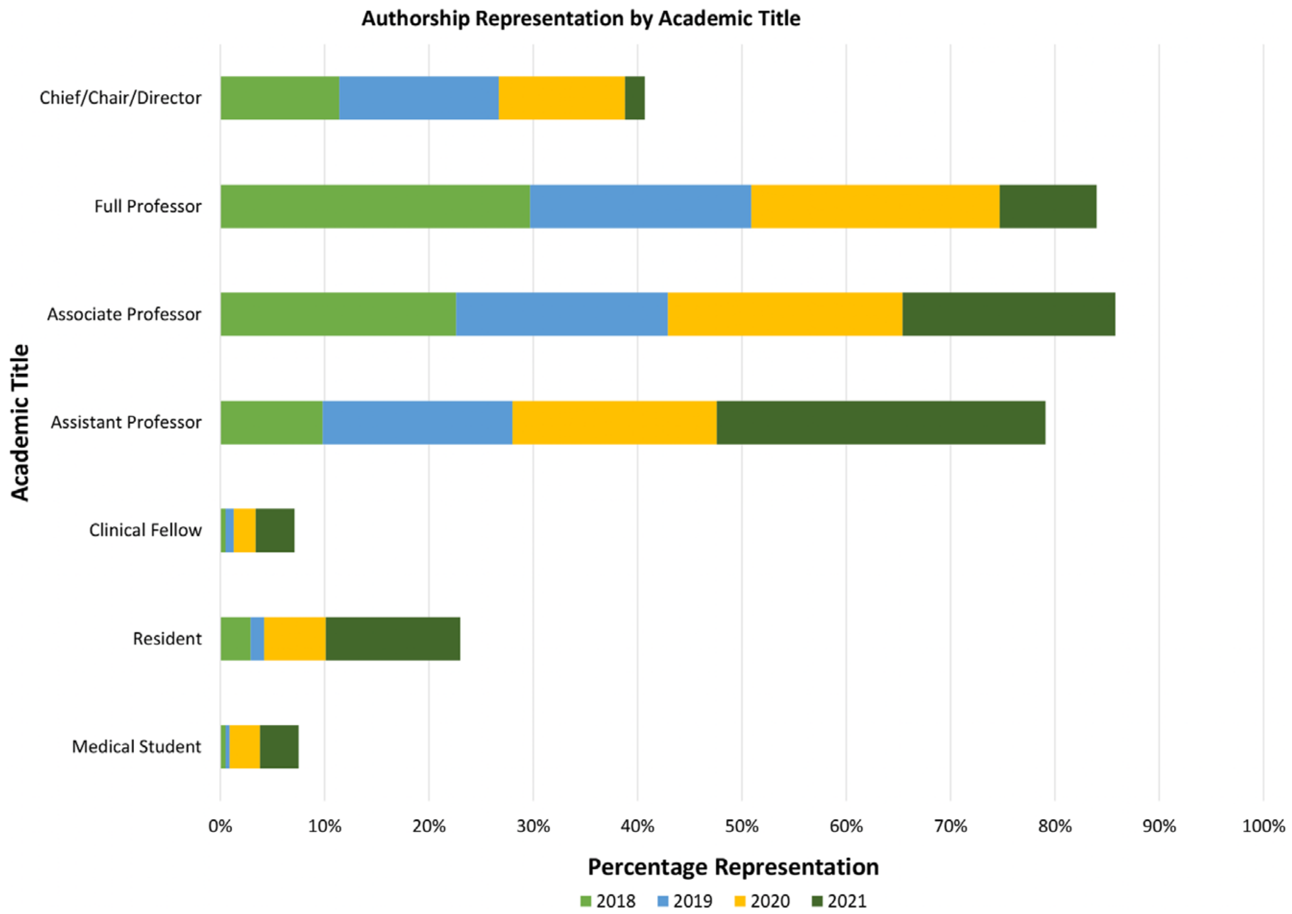

Fig. 1. Authorship representation by academic title.

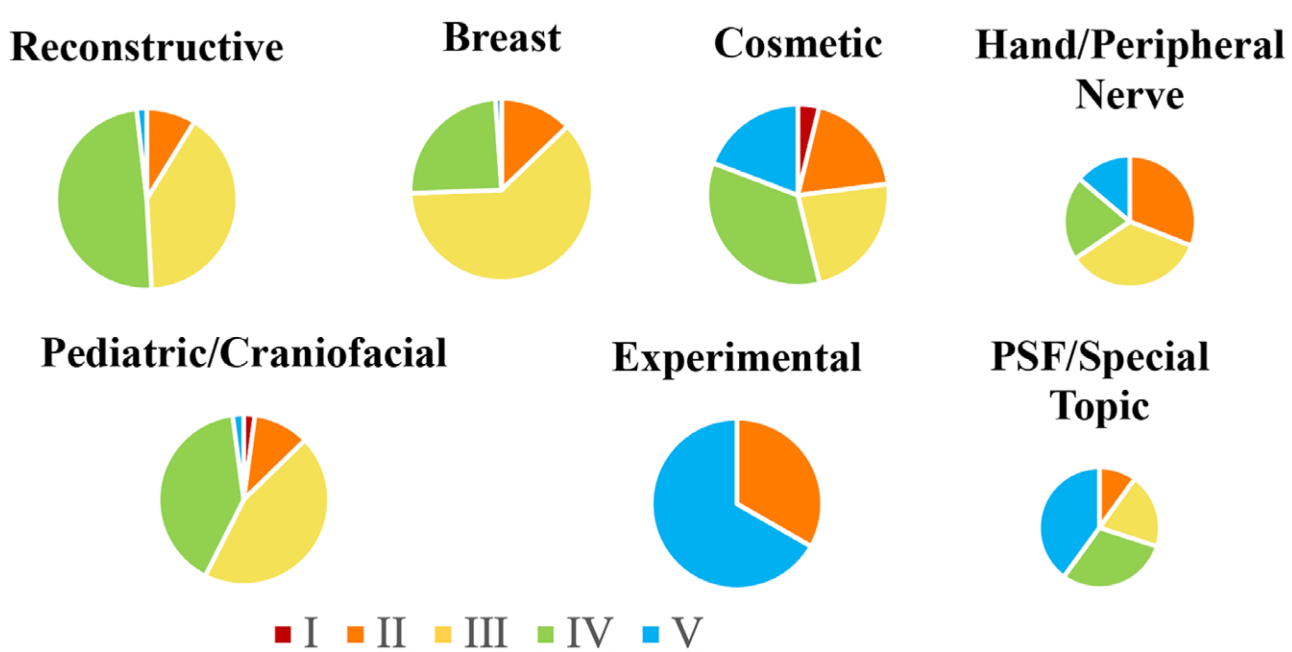

Fig. 2. LOE of publications by section.

multiple graduate degrees, plastic surgery training, and pediatric/craniofacial fellowship training were found to be significantly associated with an increased number of publications per year. Regarding quality as assessed by LOE, the preponderance of studies contained level III and IV evidence answering therapeutic clinical questions.

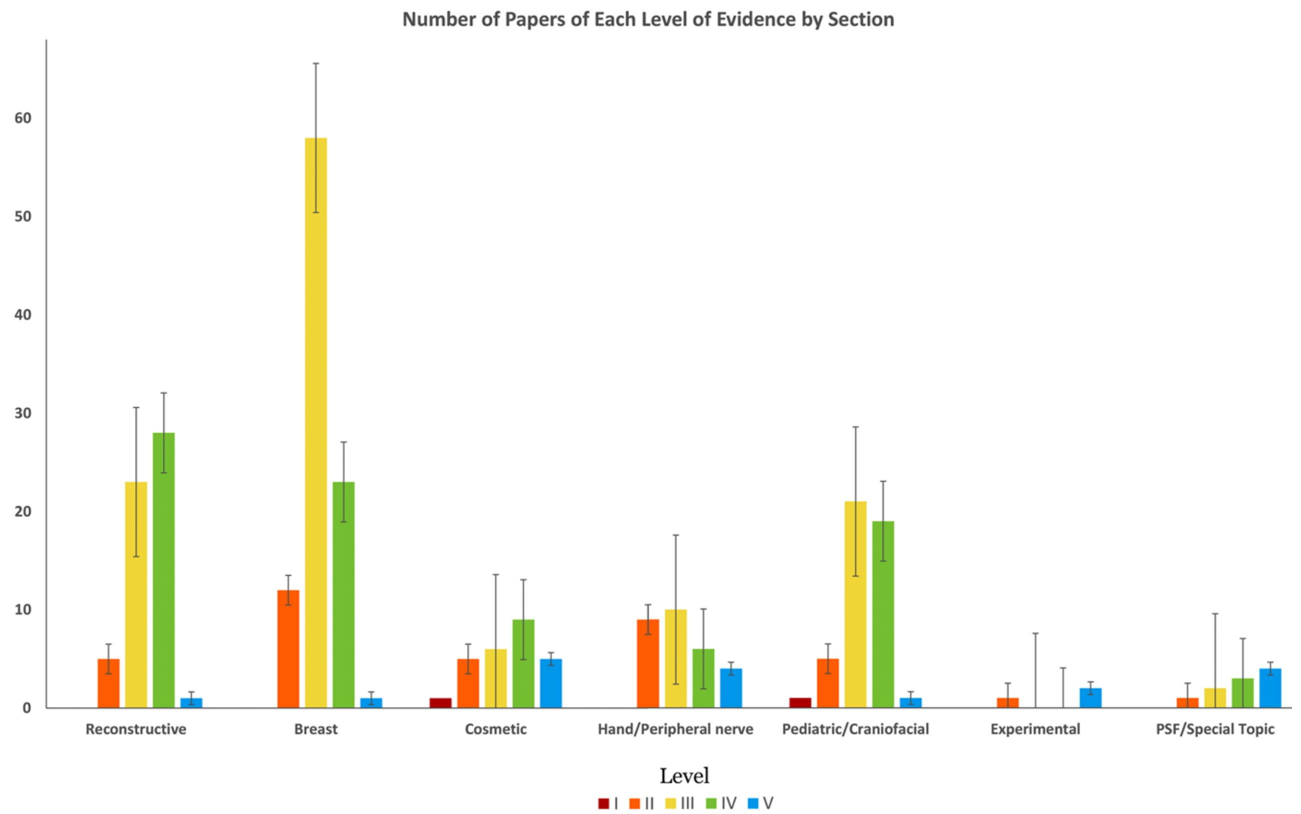

Fig. 3. Number of papers of each LOE by section.

Aside from gender, there was no impact of demographic variables or measures of academic productivity on measured outcomes. Board-certified plastic surgeons, those working in an academic setting, and individuals with a PhD published higher LOE studies than their colleagues.

The average LOE in our sample, 3.3, is identical to that observed in 2014,[7] which, although unchanged, represents improvement from previous decades when the LOE ranged between 4.16 and 4.42. Most ratable publications were level III or IV evidence (44.9% and 33.0%, respectively). This represents a notable change from the findings described by Nguyen and Mahabir[7] of 31.2% level III evidence and 42.5% level IV evidence publications in 2013. The cause of this increase in level III evidence cannot be gleaned from our methodology, but may be attributable to increased promotion of higher LOE research in the literature. It is worth considering the role of editorial policies of the journal and instructions to reviewers in this shift.[7] It was only in 2011 that *PRS* began requiring authors to report LOE at the time of submission; therefore, we would expect a delay on the order of years between learning about LOE and publication of a high LOE paper. Regardless, the quantity of high LOE publications (level I or II) remains relatively low in our sample of American authors at 40 total (15.0% of ratable publications), with no significant change observed over time ($P > 0.05$).

Plastic surgery research has become an increasingly global enterprise over the past decade.[22–24] Nevertheless, the desired reliability and granularity of variables from online sources guided our methodology toward exclusion of international authors. This proved helpful in standardizing the sample due to key differences in fellowship requirements, board certification, and lack of NIH funding among non-US-based plastic surgeons. Nevertheless, it is important to acknowledge the contributions of international plastic surgeons toward the literature.

In this cohort, female authors received board certification significantly later than male authors, implying that female authors are younger (2014 versus 2017; $P < 0.001$). Previous research has demonstrated that when adjusting for academic rank and career length, women not only meet but exceed the productivity of their male counterparts over the entire span of their careers,[25] serving as a potential explanation for the observed impact of gender.

Examination of the influence of educational variables on productivity revealed that the possession of any advanced degree, in addition to an MD, was predictive of increased quantity and quality of publications. This finding has been previously demonstrated in the neurosurgery literature, with both a master's and PhD degree significantly impacting publication output.[26] In 2021, Morris et al[27] demonstrated increased popularity of advanced degrees in academic plastic surgery and an association with quantity of publications, h-index, and NIH funding. This finding is paralleled by our sample's observed association between possession of a PhD and higher LOE publications. Although most clinicians with a PhD have a basic science background, this degree provides rigorous research training that may be transitioned to clinical research and used in the conduction of high LOE studies,[28] especially given the available subject matter and access to data in the clinical realm. Our findings build on previous research demonstrating the association of advanced degrees with journal board appointment, increased publications, higher h-index, and more NIH funding.[27] Although the reasoning for this observed trend is outside the scope of this paper, this observation could be explained by increased access to resources for research and successful grant attainment among those in an academic setting, especially with a PhD.[29] Alternatively, this trend may highlight an association between pursuing additional education or dedicated research time and an overall academic proclivity predicting a career in academia. This is supported by the association between an advanced degree and a career in academia observed in our sample.

When appraising the implications of these findings, we must consider incentives to strive for increased LOE research and barriers to achieving this goal. For the former, the practice of EBM allows us to systematically implement and evaluate our interventions in a way that minimizes bias and confounding. Additionally, EBM allows us to justify the reimbursement of expensive new products and procedures, such as dermal substitutes for breast reconstruction,[30] allowing for more equitable care. Plastic surgery is comprised of a harmonious mixture of art and science, with creativity and innovation at the forefront. The scientific process does not stifle this creativity, but rather informs the art and creates space for new questions. This application of evidence-based principles enhances the care of all patients by relying on science rather than opinions.[30]

The barriers to execution of high LOE research are many, including the ethical concerns associated with use of a surgical control group or placebo, conflict of study design with informed consent, low volume of rare procedures or diseases, and the hurdles of establishing data-sharing infrastructure, to name a few. The low-volume concern can be addressed through multi-institutional studies, which are becoming increasingly popular[24,31]; however, this often introduces variability in surgical technique and postoperative care that may confound findings. Nevertheless, this inter-institutional variation in medical and surgical management may produce more generalizable conclusions, yet another strength of multicenter research. Given that the parameters of ethical research cannot be changed, the emphasis should instead be placed on achieving the highest LOE for a given research question. For example, a cohort or case-control design is a reasonable approach whenever an RCT is not possible. Additionally, if enough cohort or case-control studies become available, this increases the prospect of systematic reviews of these studies, offering an avenue to high LOE publication.[32] Finally, it is reassuring to consider that although funding may facilitate the conduction of research, a minority of the most highly cited publications in plastic surgery received any form of industry, federal, foundational, or institutional funding,[33] demonstrating that financial capital is not a prerequisite for high-quality, high LOE research.

Limitations

This study has several limitations. First, we restricted our results to US senior authors. This was dictated by our interest in a comprehensive and objective understanding of the characteristics of senior authors publishing high LOE research. As previously discussed, *PRS* is becoming increasingly globalized, and we hope future research can compare US and international publication trends. Second, several authors did not have a Google Scholar h-index available and were excluded for associated analyses, introducing a potential source of bias to assessments using this variable specifically. Third, despite the high degree of interrater reliability using a previously published methodology, the judgment of gender and race based on images and websites is not always accurate. Fourth, our analysis included only one journal in plastic surgery—*PRS*. We chose the plastic surgery journal with the highest impact factor, which serves as a proxy for the best publications; however, generalizations about other plastic surgery journals may not be reliably drawn from our data. Fifth, this study only assesses the profile of senior authors. We focused on senior authors given this position is most often held by the most "senior" individual on a team and represents the contributor who played the largest role in study conceptualization. Although this is an assumption, this trend has been previously demonstrated outside the plastic surgery literature.[34] Finally, this is a cross-sectional study over a limited period affected by a global pandemic; therefore, observed trends may not necessarily be extrapolated outside the given timeframe.

CONCLUSIONS

The findings of this study suggest key differences in LOE of publications in *PRS* based on section and senior author's academic profile (board certification, PhD possession, and practice setting). However, most publications in *PRS* were not ratable and were comprised of reviews, expert opinions, discussions, and viewpoints, in addition to other solicited material. Additional relationships to consider in future investigations include the relationship between LOE and both altimetric data and industry funding/conflicts of interests.

If we, as a specialty, wish to continue increasing our research LOE, awareness of the value of advanced degrees, especially a PhD, and an academic setting with ample training, resources, and support is beneficial. Other measures that can be taken to promote high LOE research include education of surgeons on proper statistical and methodological approaches to RCTs, encouragement of multicenter trials, and appropriate incentivization of patients to participate in clinical trials.

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