Defining the Incidence of the Impostor Phenomenon in Academic Plastic Surgery: A Multi-Institutional Survey Study

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Background: Impostor phenomenon occurs when high-achieving individuals have persistent self-doubt despite objective measures of competence and success, and has been associated with professional burnout and attenuated career advancement in medical specialties. This study aimed to define the incidence and severity of the impostor phenomenon in academic plastic surgery.
Methods: A cross-sectional survey containing the Clance Impostor Phenomenon Scale (range, 0 to 100; higher scores indicate greater severity of impostor phenomenon) was distributed to residents and faculty from 12 academic plastic surgery institutions across the United States. Generalized linear regression was used to assess demographic and academic predictors of impostor scores.
Results: From a total of 136 resident and faculty respondents (response rate, 37.5%), the mean impostor score was 64 (SD 14), indicating frequent impostor phenomenon characteristics. On univariate analysis, mean impostor scores varied by gender (67.3 for women versus 62.0 for men; $P = 0.03$) and academic position (66.5 for residents versus 61.6 for attendings; $P = 0.03$), but did not vary by race or ethnicity; postgraduate year of training among residents; or academic rank, years in practice, or fellowship training among faculty (all $P > 0.05$). After multivariable adjustment, female gender was the only factor associated with higher impostor scores among plastic surgery residents and faculty (estimate 2.3; 95% CI, 0.03 to 4.6; $P = 0.049$).
Conclusions: The prevalence of the impostor phenomenon may be high among residents and faculty in academic plastic surgery. Impostor characteristics appear to be tied more to intrinsic characteristics, including gender, rather than years in residency or practice. Further research is needed to understand the influence of impostor characteristics on career advancement in plastic surgery. *(Plast. Reconstr. Surg.* 153: 1022e, 2024.)

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The impostor phenomenon was first described by Clance et al.[1] in a landmark article published in 1978. Defined to consist of "continual discounting of one's own abilities and persistent fears of failure" despite demonstrated measures of competence, the majority of early research by Clance et al.[1,2] described the phenomenon in high-achieving women. Although initially studied primarily in psychology, education, and business, impostor phenomenon has recently

Disclosure statements are at the end of this article, following the correspondence information.

A Video Discussion by Michael Bentz, MD, accompanies this article. Go to PRSJournal.com and click on "Video Discussions" in the "Digital Media" tab to watch.

been shown to be a widespread phenomenon in medicine, disproportionately affecting physicians compared with individuals in nonmedical specialties.[3–10] Impostor phenomenon has been associated with higher rates of professional burnout and reduced career advancement among both residents and attending physicians in the United States.[3,5,11,12]

Recent research suggests that the impostor phenomenon may be particularly common among physicians in surgical specialties.[4,6,8,11] Estimated to affect more than 70% of both resident and attending surgeons,[4,8] the phenomenon has been linked to individual surgeon attributes such as female gender, academic careers, perfectionism, and level of education.[4,11] Impostor phenomenon has also been suggested to have negative downstream implications, influencing factors such as confidence and problem-solving abilities in surgeons.[6] However, to date, whereas existing research has described the phenomenon within the general surgery, neurosurgery, and orthopedic surgery literature,[4,6,8,11,13] the prevalence of the impostor phenomenon in academic plastic surgery has yet to be defined.

The primary aim of this study was to define the prevalence of the impostor phenomenon among plastic surgery residents and attendings across a multi-institutional sample. The secondary aim of this study was to identify demographic and academic predictors associated with impostor characteristics. We hypothesized that the prevalence of the impostor phenomenon may be high in academic plastic surgery, and that severity of impostor characteristics may vary by career stage.

METHODS

After institutional review board approval was received, a cross-sectional online survey was designed using the Qualtrics platform and administered to all residents and faculty from a collaborative group of 12 academic plastic surgery institutions. Given the difficulty inherent to maintaining an appropriate response rate across residents and faculty from academic programs, this collaborative group was created to maintain reliability of data entry. The survey was administered from July 10 to September 5, 2022, with three reminder emails sent to all institutions. Participant characteristics collected included age, gender identity, race and ethnicity, geographic region of the United States, prior advanced degrees, and academic position (faculty versus resident). Faculty were polled about academic rank (assistant, associate, or full professor), years in practice, fellowship training, and type of fellowship. Residents were polled about residency program type (integrated versus independent) and postgraduate year (PGY) of training. Next, the Clance Impostor Phenomenon Scale—the most commonly cited and used analytic measure of impostor phenomenon by psychology researchers[14,15]—was distributed to participants. The Clance Imposter Phenomenon Scale has been shown to have high internal consistency, with Cronbach alpha ranging from 0.85 to 0.96 across validation studies.[14] The scale contains scenarios graded on a 1 to 5 scale (1: not at all true to 5: very true), with the final totaled score from all questions converted to a measure of the impostor phenomenon (score 0 to 40: respondent has few impostor characteristics; 41 to 60: respondent has moderate impostor characteristics; 61 to 80: respondent frequently has impostor characteristics; 81 to 100: respondent often has intense impostor characteristics). Participants were provided with their impostor score and the conversion scale at the completion of the survey. Surveys with missing data entry were excluded from analysis.

Statistical Analysis

The data from completed surveys were extracted from Qualtrics into Microsoft Excel and imported into statistical software for analysis. Participant characteristics were summarized using mean (SD) or frequency and percentage for continuous and categorical variables, respectively. The Clance Imposter Phenomenon Scale scores were summarized as mean, SD, median, and interquartile range (IQR) across the cohort. Differences in mean impostor scores based on demographic and academic attributes were tested using the chi-square test for categorical variables and analysis of variance or Kruskal-Wallis test for continuous variables, as appropriate. Multivariable linear regression was used to identify predictors of higher impostor scores across the cohort, and no variable selection procedure was applied. For all tests, P values less than 0.05 were considered statistically significant. All data analysis was performed with JMP (version 13; SAS Institute Inc.).

RESULTS

Of a total survey pool of 363 participants from 12 institutions, a total of 147 responses were received; 11 were excluded because of missing data. In total, 136 complete responses were included for analysis (response rate, 37.5%).

Table 1. Participant Demographic Characteristics (*n* = 136)

Characteristics	Values
Median age (IQR), yrs	34 (29–44)
Gender, no. (%)	
Male	73 (53.7)
Female	63 (46.3)
Race, no. (%)	
White	96 (70.6)
Black/African American	8 (5.9)
Asian	22 (16.2)
Native Hawaiian/Pacific Islander	1 (0.7)
Other	9 (6.6)
Ethnicity, no. (%)	
Hispanic/Latino	8 (5.9)
Non–Hispanic/Latino	128 (94.1)
US region, no. (%)	
Northeast	15 (11.0)
Southeast	22 (16.2)
Midwest	48 (35.3)
Southwest	18 (13.2)
West	33 (24.3)
Advanced degree, no. (%)	
Yes	37 (27.2)
No	99 (72.8)
Advanced degree type, no. (%)	
Master's	18 (48.7)
PhD	9 (24.3)
MBA	2 (5.4)
MPH	5 (13.5)
Other	3 (8.1)
Academic position, no. (%)	
Faculty	56 (41.1)
Resident	80 (58.8)

IQR, interquartile range.

Table 2. Academic Characteristics of Resident and Faculty Participants (*n* = 136)

Participants	Values
Faculty (*n* = 56), no. (%)	
Academic rank	
Assistant professor	25 (44.6)
Associate professor	15 (26.8)
Professor	16 (28.6)
Years in practice	
0–5	20 (35.7)
6–10	12 (21.4)
11–15	8 (14.3)
>15	16 (28.6)
Fellowship training	
Yes	44 (78.5)
No	12 (21.4)
Clinical fellowship type	
Craniofacial	9 (18.8)
Hand	16 (33.3)
Microsurgery	22 (45.8)
Aesthetic surgery	1 (2.1)
Residents (*n* = 80), no. (%)	
Residency program	
Integrated	78 (97.5)
Independent	2 (2.5)
Postgraduate year	
1	12 (15.0)
2	12 (15.0)
3	13 (16.3)
4	9 (11.3)
5	13 (16.3)
6	13 (16.3)
7	4 (5.0)
8	2 (2.5)
>8	2 (2.5)

Demographic characteristics of the cohort are shown in Table 1. Across the cohort, 41.1% were faculty (*n* = 56) and 58.8% were residents (*n* = 80). Median (IQR) age was 34 years (range, 29 to 44) and 53.7% were male. The majority of participants were White (70.6%), Asian (16.2%), or Black (5.9%). Geographic location of academic institution varied across participants, with 11.0% from the Northeast, 16.2% from the Southeast, 35.3% from the Midwest, 13.2% from the Southwest, and 24.3% from the West.

Academic characteristics of both residents and faculty are shown in Table 2. Across both residents and faculty, 27.2% had an advanced degree, most commonly a master's (48.7%) or a PhD (24.3%). Among faculty, 44.6% were assistant professors, 26.8% were associate professors, and 28.6% were full professors, with length of practice 0 to 5 years (35.7%), 6 to 10 years (21.4%), 11 to 15 years (14.3%), or more than 15 years (28.6%). The majority were fellowship-trained (78.5%), most commonly in microsurgery (45.8%), hand (33.3%), or craniofacial (18.8%). Most residents were associated with an integrated plastic surgery residency program (97.5%), and resident response rates were evenly distributed across PGY1 through PGY6 (range, 11.3% to 16.3% of responses from each PGY1 through PGY6 class).

Clance Imposter Phenomenon Scale responses for both residents and faculty across the cohort are displayed in Table 3. Mean scores varied from 2.2 to 4.0 across responses. Across the cohort, the lowest mean (SD) impostor score [2.2 (1.1)] was seen for question 9 ("Sometimes I feel or believe that my success in my life or in my job has been the result of some kind of error"). The highest mean (SD) impostor score [4.0 (1.0)] was seen for question 7 ("I tend to remember the incidents in which I have not done my best more than those

Table 3. Clance Impostor Phenomenon Scale Scores across the Cohort (n = 136)[a]

Clance Impostor Phenomenon Scale Item	Median Score (IQR)	Mean Score (SD)
1. I have often succeeded on a test or task even though I was afraid that I would not do well before I undertook the task.	4 (3–4)	3.7 (0.9)
2. I can give the impression that I'm more competent than I really am.	3 (3–4)	3.3 (1.0)
3. I avoid evaluations if possible and have a dread of others evaluating me.	3 (2–4)	2.7 (1.3)
4. When people praise me for something I've accomplished, I'm afraid I won't be able to live up to their expectations of me in the future.	3 (2–4)	3.0 (1.2)
5. I sometimes think I obtained my present position or gained my present success because I happened to be in the right place at the right time or knew the right people.	3 (2–4)	3.3 (1.2)
6. I'm afraid people important to me may find out that I'm not as capable as they think I am.	3 (2–4)	3.2 (1.3)
7. I tend to remember the incidents in which I have not done my best more than those times I have done my best.	4 (3–5)	4.0 (1.0)
8. I rarely do a project or task as well as I'd like to do it.	3 (2–4)	3.0 (1.0)
9. Sometimes I feel or believe that my success in my life or in my job has been the result of some kind of error.	2 (1–3)	2.2 (1.1)
10. It's hard for me to accept compliments or praise about my intelligence or accomplishments.	3 (3–4)	3.3 (1.2)
11. At times, I feel my success has been due to some kind of luck.	3 (2–4)	3.1 (1.1)
12. I'm disappointed at times in my present accomplishments and think I should have accomplished much more.	3 (2–4)	3.2 (1.3)
13. Sometimes I'm afraid others will discover how much knowledge or ability I really lack.	3 (3–4)	3.4 (1.1)
14. I'm often afraid that I may fail at a new assignment or undertaking even though I generally do well at what I attempt.	3 (3–4)	3.2 (1.0)
15. When I've succeeded at something and received recognition for my accomplishments, I have doubts that I can keep repeating that success.	3 (2–4)	3.1 (1.0)
16. If I receive a great deal of praise and recognition for something I've accomplished, I tend to discount the importance of what I've done.	4 (3–4)	3.5 (1.1)
17. I often compare my ability to those around me and think they may be more intelligent than I am.	4 (3–5)	3.8 (1.2)
18. I often worry about not succeeding with a project or examination, even though others around me have considerable confidence that I will do well.	3 (3–4)	3.5 (1.0)
19. If I'm going to receive a promotion or gain recognition of some kind, I hesitate to tell others until it is an accomplished fact.	4 (3–5)	3.9 (1.1)
20. I feel bad and discouraged if I'm not "the best" or at least "very special" in situations that involve achievement.	4 (3–4)	3.4 (1.1)

IQR, interquartile range.
[a]Clance Impostor Phenomenon Scale scores are scored 1 to 5, with 1 indicating "not at all true," 2 indicating "rarely," 3 indicating "sometimes," 4 indicating "often," and 5 indicating "very true."

Table 4. Total Clance Impostor Phenomenon Scale Scores across the Cohort[a]

Scale Score	Total (n = 136)	Residents (n = 80)	Faculty (n = 56)	P
0–40: Respondent has few impostor characteristics	4 (2.9)	1 (1.3)	3 (5.4)	0.16
41–60: Respondent has moderate impostor characteristics	48 (35.3)	24 (30.0)	24 (42.9)	0.12
61–80: Respondent frequently has impostor characteristics	69 (50.7)	46 (57.5)	23 (41.1)	0.04[b]
81–100: Respondent often has intense impostor characteristics	15 (11.0)	9 (11.3)	6 (10.7)	0.92

[a]Data are presented as no. (%). The higher the score, the more frequently and seriously the impostor phenomenon interferes in a person's life.
[b]Statistically significant.

times I have done my best"), followed by question 19 [3.9 (1.1)] ("If I'm going to receive a promotion or gain recognition of some kind, I hesitate to tell others until it is an accomplished fact").

Converted impostor scale scores are shown in Table 4. Across participants, the mean impostor score was 64.5 (SD 13.7), indicating frequent impostor characteristics. A total of 2.9% (n = 4) of the cohort had few impostor characteristics, 35.3% (n = 48) had moderate impostor characteristics, 50.7% (n = 69) had frequent impostor characteristics, and 11.0% (n = 15) had intense impostor characteristics (Table 4). The incidence of few, moderate, and intense impostor characteristics did not vary by academic rank, but residents had a higher incidence of frequent impostor characteristics compared with faculty (P = 0.04). The distributions of impostor classifications by PGY class and gender among residents are displayed in Figure 1. Across all residents, the only individual with few reported impostor characteristics (n = 1) was a PGY1 man. Men reporting intense impostor

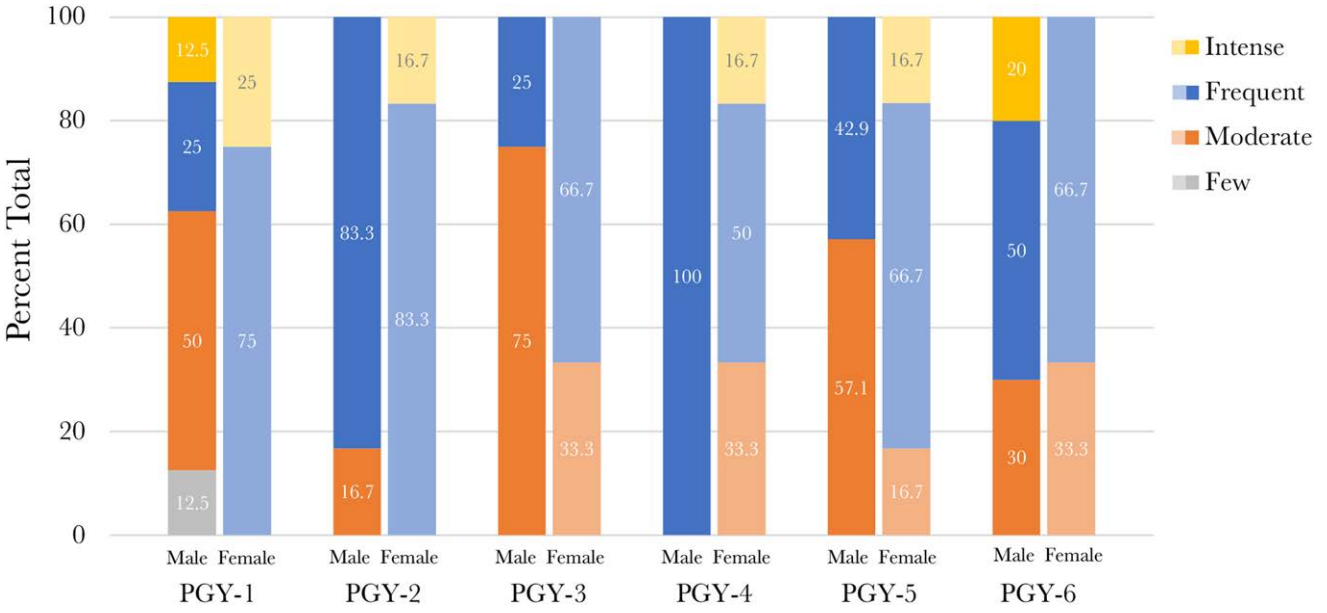

Fig. 1. Classification of Clance Impostor Phenomenon Scale scores (0 to 40, few; 41 to 60, moderate; 61 to 80, frequent; 81 to 100, intense impostor characteristics) by gender and postgraduate year (*PGY*) among plastic surgery residents.

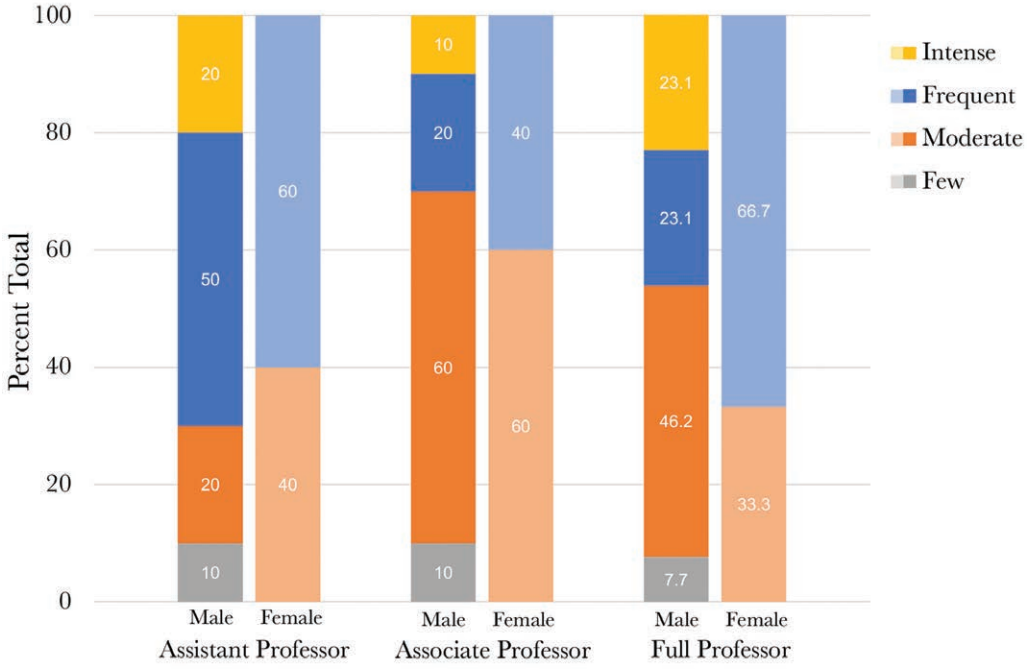

Fig. 2. Classification of Clance Impostor Phenomenon Scale scores (0 to 40, few; 41 to 60, moderate; 61 to 80, frequent; 81 to 100, intense impostor characteristics) by gender and academic rank among plastic surgery faculty.

characteristics only existed among PGY1 and PGY6 classes; women reporting intense impostor characteristics were noted in PGY1, PGY2, PGY4, and PGY5 classes. Figure 2 shows impostor characteristics by gender and academic rank among faculty. For both genders, the proportion of frequent to severe imposter characteristics was increased among assistant and full professors compared with associate professors. Individual faculty reporting few or severe impostor characteristics were all

Table 5. Comparison of Mean Impostor Scale Scores by Demographic and Academic Attributes (*n* = 136)

Characteristics	Mean Impostor Score	*P*
Gender		0.03[a]
Male	62.0 ± 15.3	
Female	67.3 ± 11.1	
Race		0.20
White	63.5 ± 13.9	
Black/African American	61.3 ± 11.5	
Asian	67.7 ± 13.7	
Native Hawaiian/Pacific Islander	49.0	
Other	71.9 ± 11.7	
Ethnicity		0.55
Hispanic/Latino	67.9 ± 16.2	
Non–Hispanic/Latino	64.3 ± 13.6	
Academic position		0.03[a]
Faculty	61.6 ± 15.5	
Resident	66.5 ± 12.0	
Faculty		
Academic rank		0.24
Assistant professor	64.0 ± 13.6	
Associate professor	55.8 ± 16.0	
Professor	63.1 ± 17.2	
Years in practice		0.71
0 to 5	64.5 ± 13.6	
6 to 10	58.7 ± 14.9	
11 to 15	62.5 ± 13.9	
>15	59.6 ± 19.2	
Fellowship training		0.70
Yes	61.1 ± 15.8	
No	63.2 ± 14.8	
Residents		
Postgraduate year		0.47
1	66.3 ± 17.6	
2	70.8 ± 9.1	
3	60.8 ± 9.0	
4	69.2 ± 8.7	
5	66.2 ± 12.6	
6	64.7 ± 11.3	
7	74.5 ± 15.3	
8	71.5 ± 15.3	
>8	61.5 ± 3.5	
US region		0.19
Northeast	62.1 ± 15.2	
Southeast	60.6 ± 10.2	
Midwest	64.8 ± 14.0	
Southwest	70.9 ± 10.1	
West	64.2 ± 15.7	

[a]Statistically significant.

men; no female attendings were found to have few or severe impostor characteristics (all women fell within the frequent and moderate categories).

Univariate comparisons of mean impostor scores by demographic and academic attributes are shown in Table 5. Mean impostor scores did not vary by race ($P = 0.20$), ethnicity ($P = 0.55$), geographic region ($P = 0.19$), academic rank ($P = 0.24$), years in practice ($P = 0.71$), or fellowship training ($P = 0.70$) among faculty, or PGY among residents ($P = 0.47$). Among faculty, the highest mean (SD) impostor scores were seen among those 0 to 5 years in practice [64.5 (13.6)] or 11 to 15 years in practice [62.5 (13.9)], and were higher among assistant professors [64.0 (13.6)] or full professors [63.1 (17.2)] compared with associate professors [55.8 (16.0)], although these differences were not statistically significant (all $P > 0.05$) (Fig. 3). Mean (SD) impostor scores varied by gender, with higher scores in women compared with men [women, 67.3 (11.1) versus men, 62.0 (15.3); $P = 0.03$]. Mean (SD) impostor scores also varied by academic position, with higher scores among residents compared with faculty [residents, 66.5 (12.0) versus faculty, 61.6 (15.5); $P = 0.03$].

After multivariable adjustment, female gender was the only independent factor associated with higher impostor scores among plastic surgery residents and faculty (estimate, 2.4; 95% CI, 0.01 to 4.8; $P = 0.049$). Other factors, including academic rank, age, and race and ethnicity, were not associated with impostor scores (all $P > 0.05$) (Table 6).

DISCUSSION

In this multi-institutional survey study from a sample of academic plastic surgery programs across the United States, the Clance Imposter Phenomenon Scale was used to define the incidence and severity of the impostor phenomenon among plastic surgery residents and faculty. Within this sample, the incidence of the impostor phenomenon was high among plastic surgery residents and faculty, and impostor characteristics varied by gender and academic position (resident versus faculty status), with higher scores among women and residents. However, no association was demonstrated between the impostor phenomenon and race or ethnicity, postgraduate year among residents, or fellowship training among faculty, although there was some variation among faculty with regard to years in practice and academic rank. Overall, this study adds to the growing evidence demonstrating a high incidence of impostor syndrome among surgical trainees and faculty, and may serve as a platform for future studies assessing the potential influence of the impostor phenomenon on burnout and career advancement in academic surgery.

Paralleling other studies in surgical subspecialties,[4,8,11] the majority of plastic surgery residents and faculty in this study reported experiencing some level of the impostor phenomenon, with 61.7% of

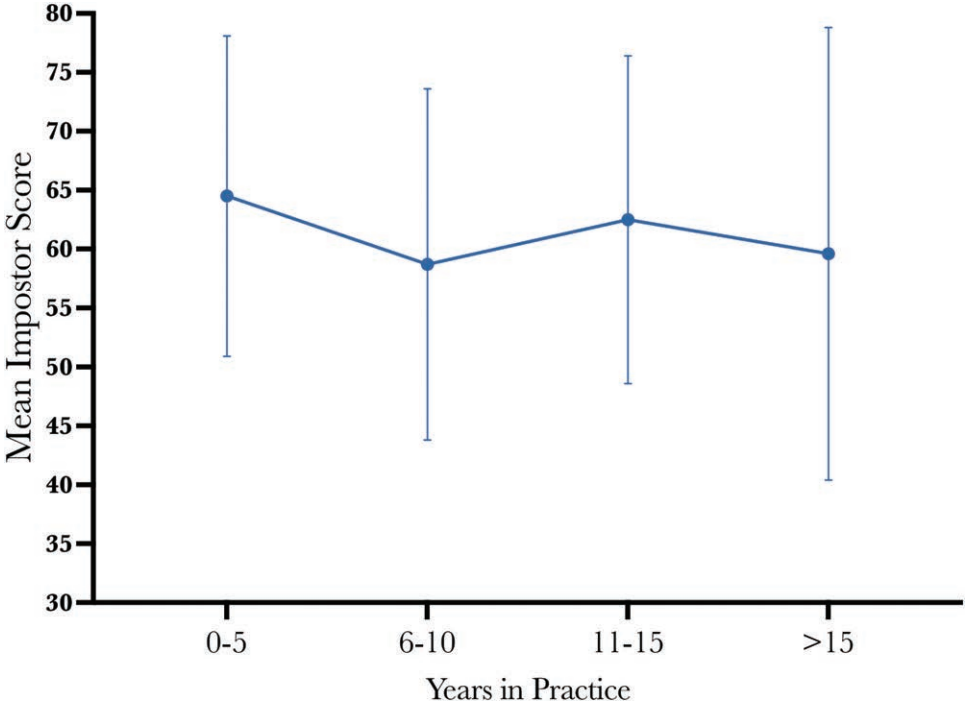

Fig. 3. Variation in mean Clance Impostor Phenomenon Scale scores by years in practice among plastic surgery attendings.

Table 6. Multivariable Linear Regression Predicting Severity of the Impostor Phenomenon among Plastic Surgery Residents and Faculty

Characteristic	Estimate (95% CI)	*P*
Intercept	74.8 (59.1, 90.5)	<0.001
Age	−0.3 (−0.7, 0.04)	0.08
Gender		
Male	Ref	Ref
Female	2.4 (0.01, 4.8)	0.049
Race		
White	Ref	Ref
Black/African American	−1.9 (−11.3, 7.6)	0.69
Asian	5.1 (−2.5, 12.7)	0.19
Native Hawaiian/Pacific Islander	−15.1 (−36.8, 6.5)	0.17
Other	9.0 (−0.8, 18.9)	0.07
Ethnicity		
Not Hispanic/Latino	Ref	Ref
Hispanic/Latino	0.5 (−4.6, 5.6)	0.85
Academic rank		
Attending	Ref	Ref
Resident	1.09 (−2.7, 4.8)	0.57

respondents reporting frequent or intense impostor characteristics. In previous multi-institutional survey studies of general surgery residents and neurosurgery young faculty and residents, Bhama et al.[8] and Zaed et al.[4] similarly found that 76% of general surgery residents and 48.9% of neurosurgeons had frequent to intense impostor characteristics measured using the Clance Imposter Phenomenon Scale. Thought to be rooted in the perfectionism and high-achieving nature inherent to pursuit of medical and surgical specialties,[13] the impostor phenomenon has been found to be more common among physicians compared with those in nonmedical careers. In turn, the impostor phenomenon has also been associated with higher rates of physician burnout. In a survey of 3116 physicians compared with a probability-based sample of the US working population, Shanafelt et al.[3] found that impostor characteristics were more prevalent among physicians compared with the general working population, and that the impostor phenomenon was highly associated with physician burnout. Moreover, in survey studies, both Liu et al.[5] and Leach et al.[11] have demonstrated a positive association between Clance Imposter Phenomenon Scale scores and rates of professional burnout among general surgeons and resident physicians. In the context of increasing efforts to identify intervenable contributors to burnout in surgical specialties including plastic surgery,[16–20] interventions targeting impostor characteristics may be one avenue to address high rates of burnout in academic surgery.

Female gender is one factor that has consistently been associated with the impostor phenomenon across both medical and nonmedical literature.[4,10,21] Originally defined by Clance et al.[1,22]

in a population of "high-achieving" women, the impostor phenomenon has been found to be more prevalent among women in populations of medical students, residents, and faculty spanning multiple medical subspecialties.[4,23,24] In our study, we find that female plastic surgery residents and faculty have a higher overall incidence of impostor characteristics compared with men, and that female gender was the only independent factor associated with higher impostor scores after multivariable adjustment. Recently, there have been growing national efforts to increase female representation within academic plastic surgery careers and societies, specifically aiming to address the leaky pipeline, a phenomenon defined by lower levels of female representation at each level of promotion in academics.[25–27] Especially in light of evidence linking impostor characteristics to attenuated career advancement and higher likelihood to stay at the same job position without promotion,[28] further exploration of the intersection between impostor characteristics and career advancement among female plastic surgeons is necessary.

The association between the impostor phenomenon and reduced career advancement may be explained by fluctuation in impostor characteristics with stages of promotion. In one of the original descriptions of the impostor phenomenon, in 1985, Clance[2] identified novice learners as high-risk groups for impostor characteristics, and described a tendency for impostor characteristics to reemerge at times of transition or promotion in professional development. Similar to these observations, we found that resident physicians have higher overall levels of the impostor phenomenon compared with faculty, a finding consistent with previous studies regarding higher levels of impostor characteristics among medical trainees, including both residents[4,11] and medical students.[10,12,23] In addition, we found that impostor phenomenon may vary by stages of promotion within academic plastic surgery. Among plastic surgery attendings, impostor scores varied by academic rank, with higher levels among assistant and full professors compared with associate professors. Moreover, faculty less than 5 years into practice and those 11 to 15 years into practice had higher impostor scores compared with those practicing for 6 to 10 or more than 15 years. This finding may be reflective of attending physicians having the highest impostor levels when starting practice, which subside, then recur with career progression and advancement based on academic promotions, national society involvement, and attainment of leadership roles. Paired with the female predisposition to impostor characteristics identified in this study, this finding may be one factor contributing to the leaky pipeline of women along stages of promotion in academic plastic surgery,[25,29] and underscores a need for transparent and objective measures of promotion and tenure in academic plastic surgery.

Our findings also may lend insight into the intersection between self-confidence and competence with progression of years in residency. We found that the only group of residents who reported few impostor characteristics were male interns. This finding may be rooted in the Dunning-Kruger effect, a cognitive bias originally described in the psychology literature[30] that has more recently been applied to assessments of medical and surgical residents,[31–33] describing an effect where "people unskilled in a domain…lack the metacognitive skills necessary to realize it."[30] In residents, this manifests as younger trainees having discordantly high self-confidence compared with competence: the self-confidence diminishes once they realize their own limitations, then grows again throughout residency with increasing experience.[31] In plastic surgery, this concept has also been applied to the attainment of mastery in microsurgical skills.[32] Based on this study, both the Dunning-Kruger effect and the impostor phenomenon may explain variation in measures of self-assessment throughout residency, findings with applicability to evolving national metrics for educational milestones and self-evaluation among plastic surgery residency programs nationally.[34,35]

Current recommended interventions to address the impostor phenomenon in medicine center on group coaching, structured mentorship, and leadership training,[36] although the evidence supporting these interventions has been limited. In one of the only evidence-based interventions published to date, Fainstad et al.[37] performed a randomized controlled trial comparing the efficacy of a 6-month group coaching program versus regular residency among 101 female residents, and found that that the coaching program led to significantly reduced impostor scores postintervention. Although the influence of structured mentorship programs has not been formally assessed within the context of impostor phenomenon, studies have also anecdotally suggested that mentorship may reduce the impostor phenomenon among trainees.[38] Within the plastic surgery literature, a growing number of studies have also proposed that gender-concordant mentorship is essential for career advancement and to

address the leaky pipeline of women in academic plastic surgery.[39–43] Based on this study, structured mentorship may also, by proxy, help mitigate impostor characteristics along stages of career advancement in plastic surgery. Additional studies are needed to assess the influence of structured mentorship programs on the impostor phenomenon, burnout, and career advancement among academic plastic surgeons.

There are limitations to this study with implications for its interpretation. First, our sample is representative of residents and faculty from 12 academic plastic surgery institutions. Although we developed this group to maintain reliability of data entry and geographic diversity among programs, this limits generalizability of survey results to residents and faculty from other programs across the country. In addition, the size of certain subgroups in the cohort was likely too small to detect statistical differences. For example, it has been described that physicians who are ethnically underrepresented in medicine tend to have higher levels of impostor phenomenon.[44,45] Our modest number of physicians who self-identified as underrepresented in medicine may explain why our findings were not consistent with these previous studies. In addition, the size of certain subgroups limited our ability to define the fluctuation of impostor phenomenon along stages of career advancement; future studies should include medical students to better delineate how impostor scores vary from medical school to residency to progression through stages of promotion as faculty. Finally, the Clance Imposter Phenomenon Scale is the most widely described measure of impostor phenomenon and is considered the standard measure within existing psychology literature. However, given that the impostor phenomenon has not been defined by the *Diagnostic and Statistical Manual of Mental Disorders*, the sensitivity and specificity of this scale have not been evaluated, and the high levels of impostor phenomenon captured herein could also be reflective of other character traits, such as perfectionism, which have been shown to be associated with the impostor phenomenon across the psychology literature.[23,46–49] Despite these limitations, this study is the first to define the incidence and predictors of the impostor phenomenon in plastic surgery residents and faculty. Our ultimate goal for these findings is to inform future national studies assessing the effects of impostor phenomenon on burnout and career advancement in academic plastic surgery. Future directions include prospective studies to assess the influence of interventions, such as structured mentorship programs, on levels of the impostor phenomenon among academic plastic surgeons.

CONCLUSIONS

The impostor phenomenon is prevalent in academic plastic surgery, particularly among women and resident physicians. Levels of impostor characteristics may fluctuate with promotion and career advancement among academic plastic surgery attendings. Further research is needed to explore the intersection among the impostor phenomenon, burnout, and career advancement in plastic surgery.

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DISCLOSURE

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