



# Impostor Phenomenon and Burnout in General Surgeons and General Surgery Residents

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**OBJECTIVE:** Impostor phenomenon (IP) characterizes feelings of self-doubt coupled with feelings that achievements were based on luck and a fear of being discovered as an intellectual fraud. Recently, studies have focused on IP in medical trainees and its association with burnout; however, this research has not yet been conducted on surgeons. This study addresses that gap by investigating the prevalence of IP and burnout in general surgeons and surgery residents.

**DESIGN:** Participants completed two unlinked, blinded surveys. The first survey included demographics and scholarly activity, while the second included the Clance Impostor Phenomenon Scale (CIPS) and a validated, single-item burnout score.

**SETTING:** Hennepin County Medical Center and University of Minnesota, Minneapolis, MN.

**PARTICIPANTS:** General surgeons and general surgery residents at two teaching hospitals, one community-based ( $N = 46$ ) and one university-based ( $N = 42$ ).

**RESULTS:** The majority of both surgeons and residents were male, Caucasian, and married. Residents scored significantly higher compared to faculty in nearly half of CIPS questions. The overall CIPS score was significantly higher in trainees as well (61 vs 51,  $p = 0.017$ ). Burnout did not differ significantly between trainees (30%) and faculty (41%) ( $p = 0.545$ ). We found no significant differences in gender or years of practice in those with clinical IP (CIPS >62), and logistic regression analysis showed

burnout as the only significant association for clinical IP symptoms (OR 3.95,  $p = 0.017$ ).

**CONCLUSIONS:** Contrary to studies in other medical fields, female general surgery faculty and trainees were no more likely than males to display characteristics of IP. Residents did; however, score higher than faculty on overall CIPS score. While we cannot determine how burnout and IP directly impact each other, our study shows that both faculty and trainees experiencing burnout are more likely to report symptoms of IP. (J Surg Ed 76:99–106. © 2018 Association of Program Directors in Surgery. Published by Elsevier Inc. All rights reserved.)

**KEY WORDS:** Surgery residency, Surgeon, Burnout, Impostorism

**COMPETENCIES:** Interpersonal and Communication Skills, Systems-Based Practice

## INTRODUCTION

The impostor phenomenon (IP), originally described by Clance et al. in 1978, is defined by an internal feeling of intellectual fraudulence in high-achieving individuals and an inability to internalize success.<sup>1</sup> Individuals with impostor feelings believe that they have fooled others into believing that they are more intelligent and capable than they really are despite validating personal achievements.<sup>2</sup> It has also been connected to a multitude of negative clinical outcomes such as anxiety and depression.<sup>3–5</sup> Symptoms of IP are correlated with low conscientiousness and high neuroticism.<sup>4</sup> Specifically, impostor feelings manifest in fear of failure, fear of success, and low self-esteem and has been shown to negatively impact career development.<sup>6</sup> Though the phenomenon has not been

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*Abbreviations:* CIPS, Clance Impostor Phenomenon Scale; IP, Impostor Phenomenon;

well studied in those in the medical field, existing studies continue to show a predilection for symptoms of IP in females (Henning 1998) and foreign medical graduates.<sup>7,8</sup> Surgery is a field in which the total number of females, while on the rise, is still far less than half.<sup>9</sup> During the 2016 to 2017 academic year, 44% of all residents were female, but when considering general surgery, this number dropped to 36%.<sup>10</sup> Current numbers show that 17% to 19% of surgical faculty are female.<sup>11</sup>

Burnout, like IP, is prevalent in the medical field.<sup>3</sup> In recent years, attention has focused on managing physician burnout as a means to retain the workforce. Burnout includes factors associated with emotional exhaustion, depersonalization, and reduced personal accomplishment.<sup>12</sup> Over 50% of physicians have reported at least one symptom of burnout and 69% of US general surgery residents meet the threshold for burnout symptoms.<sup>13,14</sup> Burnout has not only risen in prevalence but has been connected to negative consequences such as significantly lower quality of life and decreased career satisfaction.<sup>15</sup> Unfortunately, factors that contribute to burnout are not well known, and little exists in terms of interventions to mitigate burnout.<sup>16</sup> An established correlate to burnout is the IP.<sup>8,17</sup>

Research on the effects of IP has primarily been conducted on non-surgical residents and physicians. There are no studies examining IP in general surgeons and surgery trainees. Because of the gender differences in the surgical field as compared to other specialties and the prevalence of burnout among surgeons,<sup>18</sup> our aim was to examine IP in surgeons and surgical trainees and any potential relationship to burnout in this population.

## METHODS

After gaining Institutional Research Board approval, general surgeons and general surgery residents from two unique general surgery residencies (one university- and one community-based) were included for participation in the study. The Institutional Research Board required that no identifying information be included or linked with the impostorism and burnout surveys. An initial e-mail was sent out extending an invitation to participate including a statement of the voluntary nature of participating in the study and that no potentially identifying demographic information would be tracked or linked to the second survey. Upon completion of the demographic survey, the Research Electronic Data Capture (REDCap) database automatically sent a link to the second survey containing the Clance Impostor Phenomenon Scale (CIPS) and a validated single-item burnout measure.<sup>1,19,20</sup> The CIPS is a 20-item instrument developed by Pauline Rose Clance, PhD, who holds copyright.<sup>1</sup> Permission was obtained from Dr. Clance before using this scale in the study. This instrument

contains items that identify different aspects of IP including fear of evaluation, fear of not being able to repeat success, and fear of being less capable than others. A validated single-item burnout measure was used for self-evaluation.<sup>19,20</sup> We defined not exhibiting burnout as (1) "I have no symptoms of burnout" or (2) "Occasionally I am under stress, but I don't feel burned out." We defined having burnout symptoms as (3) "I am definitely burning out and have one or more symptoms of burnout," (4) "The symptoms of burnout that I'm experiencing won't go away," or (5) "I feel completely burnout and often wonder if I can go on."

Student's T test was used for continuous variables and Fisher's exact test for categorical variables. Regression analysis was performed to assess the impact of each variable on IP. Study data were collected and managed using REDCap electronic data capture tools hosted at Hennepin County Medical Center.<sup>21</sup> REDCap is a secure, web-based application designed to support data capture for research studies, providing: (1) an intuitive interface for validated data entry; (2) audit trails for tracking data manipulation and export procedures; (3) automated export procedures for seamless data downloads to common statistical packages; and (4) procedures for importing data from external sources. All analyses were conducted using STATA 15.1 (StataCorp College Station, TX).

## RESULTS

Our results found a higher response rate for community hospital surgeons and trainees (87%) compared to the university-based group (55%). The majorities of respondents were male (70%), Caucasian (91%), had children (67%), and were married (78%). A higher percentage (68%) of residents responded to the surveys. Faculty at both institutions were more likely to have children in and out of the home when compared to the resident group (Table 1).

There was no significant difference between residents and attending surgeons when comparing numbers of national presentations, peer-reviewed manuscripts, or book chapters published the prior year. However, residents reported more presentations at local conferences (Table 1). The majority of trainees and faculty attended a U.S. medical school. Results from prior years' in-training exam demonstrated a fairly even distribution between quartiles (Table 1). Years of practice for faculty leaned toward 11+ years (60%) (Table 1).

Trainees scored significantly higher than faculty in 8 of the 20 CIPS items (Table 2). When looking at CIPS results overall, residents scored significantly higher than faculty (61 vs 51,  $p = 0.017$ ). There was no significant difference in measured feelings of burnout between

**TABLE 1.** IP Survey 1: Demographics

	<b>General surgeon cohort N = 63</b>	<b>Trainee N = 43</b>	<b>Faculty N = 20</b>	<b>p value*</b>
Sex M, N (%)	44 (69.8)	27 (62.8)	17 (85)	0.086
Race white, N (%)	57 (90.5)	39 (90.7)	18 (90.0)	1.000
Ethnicity hispanic, N (%)	4 (6.4)	3 (7.0)	1 (5.0)	1.000
Marital status, N (%)				0.058
Single	13 (20.6)	12 (27.9)	1 (5)	
Married	49 (77.8)	30 (69.8)	19 (95)	
Committed partnership	1 (1.6)	1 (2.3)	0 (0)	
Practice location, N (%)				1.000
Community hospital invitees N=46	40 (63.5)	27 (62.8)	13 (65.0)	
University hospital invitees N=42	23 (36.5)	16 (37.2)	7 (35.0)	
Children, N (%)				
In the home	32 (50.8)	17 (39.5)	15 (75.0)	0.014
Out of the home	10 (15.9)	1 (2.3)	9 (45.0)	<0.001
Number of children, N (%)				
In the home				0.479
1	12 (37.5)	7 (41.2)	5 (33.3)	
2	15 (46.9)	9 (52.9)	6 (40.0)	
3	4 (12.5)	1 (5.9)	3 (20)	
4	1 (3.1)	0 (0)	1 (6.7)	
Out of the home				0.600
1	3 (30)	1 (100)	2 (22.2)	
2	4 (40)	0 (0)	4 (44.4)	
3	2 (20)	0 (0)	2 (22.2)	
4	1 (10)	0 (0)	1 (11.1)	
National abstract/paper presentations past year, N (%)				0.117
0	36 (57.1)	24 (5.8)	12 (60.0)	
1	12 (19.1)	11 (25.6)	1 (5.0)	
2	6 (9.5)	4 (9.3)	2 (10.0)	
3	5 (7.9)	3 (7.0)	2 (10.0)	
4	2 (3.2)	0 (0)	2 (10.0)	
5	2 (3.2)	1 (2.3)	1 (5.0)	
Local abstract/paper presentations past year, N (%)				0.028
0	41 (65.1)	28 (65.1)	13 (65.0)	
1	12 (19.1)	11 (25.6)	1 (5.0)	
2	4 (6.4)	2 (4.7)	2 (10.0)	
3	3 (4.8)	2 (4.7)	1 (5.0)	
4	3 (4.8)	0 (0)	3 (15.0)	
Peer-reviewed manuscripts past year, N (%)				0.061
0	39 (61.9)	27 (62.8)	12 (60.0)	
1	13 (20.6)	11 (25.6)	2 (10.0)	
2	5 (7.9)	3 (7.0)	2 (10.0)	
3	2 (3.2)	0 (0)	2 (10.0)	
4	1 (1.6)	1 (2.3)	0 (0)	
6	1 (1.6)	1 (2.3)	0 (0)	
10+	2 (3.2)	0 (0)	2 (10.0)	
Books/book chapters published last year, N (%)				0.485
0	54 (85.7)	38 (88.4)	16 (80.0)	
1	7 (11.1)	4 (9.3)	3 (15.0)	
2	1 (1.6)	0 (0)	1 (5.0)	
3	1 (1.6)	1 (2.3)	0 (0)	
Medical school in the U.S., N (%)	59 (93.7)	40 (93.0)	19 (95.0)	1.000
Current resident year of training, N (%)				
1 to 2		16 (37.2)		

(continued)

**TABLE 1 (CONTINUED)**

	General surgeon cohort N = 63	Trainee N = 43	Faculty N = 20	p value*
3 to 5		22 (51.2)		
6+		5 (11.6)		
Prior year in-training exam quartile, N (%)				
Did not take exam		6 (14.0)		
100 to 76		11 (25.6)		
75 to 51		12 (27.9)		
50 to 26		9 (20.9)		
25 to 1		5 (11.6)		
Faculty years of practice, N (%)				
0 to 2			2 (10)	
3 to 5			3 (15)	
6 to 10			3 (15)	
11 to 20			6 (30)	
20+			6 (30)	

\*Fischer's exact test for categorical variables. Abbreviations: M, male.

trainees (30%) and faculty (41%) ( $p = 0.545$ ) (Table 2). Looking specifically at those who had clinical IP symptoms, defined as a score of 62 or greater, there were no differences in gender or practice location (Table 3). Clinical symptoms of IP decreased as years of practice increased; however, this difference failed to reach statistical significance. Symptoms of burnout were significantly higher in those with clinical symptoms of IP ( $p = 0.024$ ) (Table 3). When examining factors associated with clinical symptoms of IP, only burnout was associated with a higher risk of clinical symptoms of IP (OR 3.95,  $p = 0.017$ ) (Table 4).

## DISCUSSION

The aim of this study was to examine the relationships between reported symptoms of IP and burnout in general surgery residents and surgeons. We found no significant gender differences in IP in this cohort of surgical faculty or trainees. Interestingly, surgery residents showed significantly higher IP symptoms compared to faculty.

Clance et al. hypothesized that women fail to internalize success the same way men do resulting in lower self-esteem and imposter feelings.<sup>2</sup> Previous research has found female gender to be positively correlated with IP symptoms in medical students and internal medicine residents.<sup>7,8,17</sup> However, our study did not find significant gender differences in surgeons and surgery residents who reported IP symptoms and those who did not. It is possible that factors which are influenced by gender are predictive of IP rather than gender itself. Studies have found personality traits to be predictive of IP.<sup>22,23</sup> In a cohort of surgeons and surgery trainees, staff personality traits

influenced resident perception of their operative role, while gender did not.<sup>24</sup> It is also possible that there are unique features to the respondents in this study which affect self-confidence as it relates to gender. For example, both programs in the study have female surgeons in leadership roles; this could play a role in improving the female residents' confidence in their ability.

Physician burnout is increasingly in the spotlight, with physicians reporting a 10% increase in burnout over 3 years.<sup>25</sup> Recent studies have shown that residents were significantly more likely to report burnout than faculty or early career physicians.<sup>15,26</sup> A survey of 753 general surgery residents found that 69% met criteria for burnout,<sup>13</sup> with almost half of residents who reported burnout considering dropping out of their program.<sup>13,27</sup> Our study showed no significant differences in burnout between trainees and faculty surgeons. It is possible that with increasing attention paid to burnout and its symptom recognition, an environment in which it is safe to report and treat burnout has been created, thereby decreasing its incidence.

Research on the relationship between burnout and IP is limited, but a positive correlation has been reported between clinical IP and burnout symptoms in medical residents.<sup>8</sup> Our results were consistent with these findings; surgical faculty and trainees who reported clinical IP symptoms were more likely to report feelings of burnout ( $p = 0.024$ ). Interestingly, while there was no difference in faculty and trainee burnout; trainees were significantly more likely to report feelings of IP.

While no previous research has been conducted looking at IP symptoms in the surgical field, IP appears to be strongly associated with the fourth year of medical school and medical residents.<sup>7,8,17</sup> In studies looking at

**TABLE 2.** CIPS and Burnout Survey Response

	<b>General surgeon cohort N = 60</b>	<b>Trainee N = 43</b>	<b>Faculty N = 17</b>	<b>p value*</b>
Sex M, N (%)	42 (70.0)	27 (62.8)	15 (88.2)	0.066
Practice location, mean (SD)				0.765
Community hospital	39 (65.0)	27 (62.8)	12 (70.6)	
University hospital	21 (35.0)	16 (37.2)	5 (29.4)	
CIPS, mean (SD)				
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.	3.7 (0.9)	3.7 (0.9)	3.9 (1.0)	0.376
I can give the impression that I'm more competent than I really am.	3.3 (1.0)	3.4 (1.0)	3.1 (0.8)	0.225
I avoid evaluations if possible and have a dread of others evaluating me.	2.6 (1.3)	2.5 (1.1)	2.7 (1.3)	0.505
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.	2.8 (1.2)	3 (1.1)	2.2 (1.2)	0.012
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.	2.5 (1.2)	2.6 (1.3)	2.2 (0.9)	0.181
I'm afraid people important to me may find out that I'm not as capable as they think I am.	2.7 (1.3)	3.0 (1.1)	1.9 (1.3)	0.003
I tend to remember the incidents in which I have not done my best more than those times I have done my best.	3.5 (1.0)	3.5 (1.0)	3.3 (1.2)	0.467
I rarely do a project or task as well as I'd like to do it.	2.9 (1.0)	3.0 (1.0)	2.6 (1.0)	0.103
Sometimes I feel or believe that my success in my life or in my job has been the result of some kind of error.	2.0 (1.1)	2.1 (1.1)	1.9 (1.0)	0.498
It's hard for me to accept compliments or praise about my intelligence or accomplishments.	3.1 (1.1)	3.1 (1.1)	2.9 (1.1)	0.567
At times, I feel my success has been due to some kind of luck.	2.6 (1.2)	2.8 (1.2)	2.2 (1.0)	0.116
I'm disappointed at times in my present accomplishments and think I should have accomplished much more.	2.7 (1.3)	2.9 (1.3)	2.2 (1.0)	0.066
Sometimes I'm afraid others will discover how much knowledge or ability I really lack.	2.8 (0.9)	3.1 (1.2)	2.1 (0.9)	0.002
I'm often afraid that I may fail at a new assignment or undertaking even though I generally do well at what I attempt.	1.1 (1.2)	3.3 (1.1)	2.2 (1.0)	0.001
When I've succeeded at something and received recognition for my accomplishments, I have doubts that can keep repeating that success.	2.7 (1.1)	2.9 (1.1)	2.1 (0.9)	0.016
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.	3.1 (1.0)	3.0 (1.1)	3.2 (1.0)	0.555
I often compare my ability to those around me and think they may be more intelligent than I am.	3.2 (1.0)	3.4 (1.0)	2.6 (1.0)	0.005
I often worry about not succeeding with a project or examination, even though others around me have considerable confidence that I will do well.	2.9 (1.1)	3.2 (1.0)	2.3 (1.2)	0.005
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.	3.6 (1.2)	3.7 (1.1)	3.4 (1.2)	0.366
I feel bad and discouraged if I'm not "the best" or at least "very special" in situations that involve achievement.	2.7 (1.1)	3.0 (1.1)	2.2 (1.0)	0.015
CIPS raw score, mean (SD)	58.2 (14.8)	61.0 (14.2)	51.1 (14.0)	0.017
Burnout, mean (SD)	2.4 (0.7)	2.3 (0.6)	2.6 (1.1)	0.105
Burnout, N (%)	20 (33.3)	13 (30.2)	7 (41.2)	0.545

\* Student's T-Test for continuous variables and Fisher's exact test for categorical variables. Abbreviations: SD, standard deviation.

**TABLE 3.** Clinical IP Symptoms

	No clinical IP symptoms (<62) N = 49	Clinical IP symptoms (>=62) N = 17	p value*
Sex, N (%)			0.571
Male	27 (64)	15 (36)	
Female	10 (56)	8 (44)	
Practice location			0.404
Community hospital	26 (67)	13 (33)	
University hospital	11 (52)	10 (48)	
Years of practice, N (%)			0.270
Trainee	24 (56)	19 (44)	
Faculty < 5 years	4 (67)	2 (33)	
Faculty 5+ years	9 (82)	2 (18)	
Burnout			0.039
1	1 (3)	1 (4)	
2	28 (76)	10 (43)	
3	6 (16)	9 (39)	
4	1 (3)	3 (13)	
5	1 (3)	0 (0)	
Burnout, N (%)	8 (40)	12 (60)	0.024

\* Fischer's exact test for categorical variables.

**TABLE 4.** Regression Analysis Clinical IP Symptoms

	OR (CI)	p value*
Sex Female	1.44 (0.47, 4.43)	0.525
Years of practice		
Trainee	3.56 (0.69, 18.48)	0.130
Faculty < 5 years	2.25 (0.23, 22.14)	0.487
Burnout	3.95 (1.27, 12.27)	0.017

\* Univariate logistic regression.

burnout in residents over time, burnout symptoms decreased over time in medical residents.<sup>28</sup> While the difference did not reach statistical significance, our study found that rates of reported clinical IP symptoms decreased with years of practice. These combined results seem to suggest that gaining experience in the surgical field might mitigate IP symptoms. Previous research has found self-esteem to be predictive of IP.<sup>29</sup> It is possible that gaining experience and confidence in surgical ability helps alleviate imposter feelings.

Our study has several limitations. First, the research presented in our study was gathered solely through self-report measures. In addition, the sample used in this study is from two institutions in the upper Midwest which may not reflect the experience of surgeons in other parts of the country. Unfortunately, due to privacy restrictions, we were unable to obtain more detailed information regarding the respondents' home life or to link surveys 1 and 2. Further research should include both trainees and faculty and look at factors such as personality and self-esteem and their influence on IP in a larger cohort of surgeons and trainees.

## CONCLUSION

This is the first study examining IP in general surgeons and trainees. We found no significant gender differences of reported IP in this cohort of surgical faculty and trainees, a finding which is not reflected in other studies of non-surgeon physicians and residents. Surgery faculty and trainees who report symptoms of burnout are at higher risk of also experiencing clinical IP symptoms. IP symptoms are significantly lower in faculty compared to trainees and IP decreases with advancing years of practice.

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