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ORIGINAL ARTICLE

Imposter Phenomenon in US Physicians Relative to the US Working Population

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Abstract

Objective: To determine the prevalence of imposter phenomenon (IP) experiences among physicians and evaluate their relationship to personal and professional characteristics, professional fulfillment, burnout, and suicidal ideation.

Participants and Methods: Between November 20, 2020, and February 16, 2021, we surveyed US physicians and a probability-based sample of the US working population. Imposter phenomenon was measured using a 4-item version of the Clance Imposter Phenomenon Scale. Burnout and professional fulfillment were measured using standardized instruments.

Results: Among the 3237 physician responders invited to complete the subsurvey including the IP scale, 3116 completed the IP questions. Between 4% (133) and 10% (308) of the 3116 physicians endorsed each of the 4 IP items as a "very true" characterization of their experience. Relative to those with a low IP score, the odds ratio for burnout among those with moderate, frequent, and intense IP was 1.28 (95% CI, 1.04 to 1.58), 1.79 (95% CI, 1.38 to 2.32), and 2.13 (95% CI, 1.43 to 3.19), respectively. A similar association between IP and suicidal ideation was observed. On multivariable analysis, physicians endorsed greater intensity of IP than workers in other fields in response to the item, "I am disappointed at times in my present accomplishments and think I should have accomplished more."

Conclusion: Imposter phenomenon experiences are common among US physicians, and physicians have more frequent experiences of disappointment in accomplishments than workers in other fields. Imposter phenomenon experiences are associated with increased burnout and suicidal ideation and lower professional fulfillment. Systematic efforts to address the professional norms and perfectionistic attitudes that contribute to this phenomenon are necessary.

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The high rates of burnout and occupational distress (eg, problems with work-life integration, moral injury) in physicians relative to US workers in other fields have been well chronicled.[1-4] These issues have received increased attention by health care delivery organizations, payers and insurance companies, as well as the general public because of their effects on access, cost of care, patient experience, and quality of care.[2,5,6] Although occupational burnout among physicians is a system issue primarily attributable to problems in the practice environment,[2,7-9] professional norms and aspects of the culture of medicine often contribute to the distress experienced by individual physicians.[10] These dimensions have been well characterized and include suggestions that physicians should be impervious to normal human limitations (ie, superhuman), work should always come first, and seeking help is a sign of weakness.[11-14] In aggregate, these mindsets lead many physicians to engage in unhealthy levels of self-sacrifice manifested by excessive work hours, anxiety about missing something that would benefit their patients, and prioritizing work over personal health.[15,16]

The concept of low self-valuation encompasses a harsh response to perceived

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From Stanford University, Palo Alto, CA (T.D.S., M. Trochel, M.S.M., H.W.); University of Colorado, Denver (L.N.D.); American Medical Association, Chicago, IL (C.S., M. Tutty, L.E.C.); and Mayo Clinic, Rochester, MN (C.P.W.).

personal shortcomings and perpetual deferral of self-care and personal needs to meet the needs of others.[17,18] Low levels of self-valuation appear to be an Achilles' heel for physicians. Although physicians have higher levels of personal resilience than workers in other fields,[19] they have lower levels of self-valuation.[18] This factor translates into many physicians being empathetic with others but self-critical and perfectionistic with themselves.[20] This mindset, when combined with the professional norms previously discussed and a highly accomplished peer group, results in many physicians believing their personal accomplishments are inadequate.

The "imposter phenomenon" (IP; sometimes referred to as imposter syndrome), first described in 1978, is a psychological construct characterized by the persistent belief that one's success is undeserved rather than due to personal effort, skill, and ability.[21,22] The phenomenon occurs in high-achieving individuals who experience feelings of inadequacy and self-doubt despite objective proof of competence and achievement. Imposter phenomenon is common in both men and women, with some studies suggesting it may be more prevalent in women.[22] Studies across industries suggest that IP is associated with both personal (eg, low emotional well-being, problems with work-life integration, anxiety, depression, suicide) and professional (eg, impaired job performance, occupational burnout) consequences.[22-27] Studies in US medical students have revealed that more than 1 in 4 medical students experience IP and that those experiencing IP are at higher risk for burnout.[23,28-31] Because times of transition are a risk factor for IP, the frequent rotation between clerkships and being a "perpetual novice" during medical school training may contribute to the high prevalence.[32] Despite these studies suggesting that IP is a problem early in the physician training process, there is limited information on IP among physicians in practice.[23] Qualitative studies suggest that, once in practice, other professional experiences (eg, unfavorable patient outcomes, patient complaints, rejection of grants or manuscripts, and poor teaching evaluations or patient satisfaction scores) may contribute to IP.[33]

We report the results of a national study of IP in a large sample of US physicians, explore its correlation with personal and professional characteristics, examine its relationships with burnout, professional fulfillment, and suicidal ideation (SI), and assess the prevalence of feeling disappointment in current accomplishments (a dimension of IP) in physicians relative to US workers in other fields.

PARTICIPANTS AND METHODS

As previously reported,[34] we conducted a cross-sectional survey of US physicians and US workers in other fields between November 20, 2020, and February 16, 2021. The study used a methodological approach similar to our prior studies in 2011,[1] 2014,[35] and 2017.[4,36] Details regarding the physician and population samples as well as the instruments used to assess burnout (the Maslach Burnout Inventory[37-39]), professional fulfillment (Stanford Professional Fulfillment Index[40,41]), self-valuation (Clinician Self-valuation Scale[17,18]), and suicidal ideation[14,42] can be found in the prior publication[34] and the Supplemental Methods section (available online at http://www.mayoclinicproceedings.org).

IP and Self-valuation

The Clance Imposter Phenomenon Scale is a 20-item scale that asks responders to indicate how well each item characterizes their experience on a 5-point scale with options ranging from "not at all" to "very true."[43,44] Each item receives a point score from 1 to 5 in which the sum of responses to the individual items is used to create an aggregate score. The higher the score, the more frequently and seriously IP interferes in a person's life. Established cutoffs have been developed to categorize individuals based on aggregate score into minimal, moderate, frequent, and intense IP experiences.[43] The scale consists of 3 subscales (fake, luck, and discount).[45] With permission from Dr Pauline Clance, we used a 4-item version of the Clance Imposter Phenomenon Scale in the present study (see Supplemental Methods section). Specifically,

4 items from the "fake" subscale were selected for inclusion based on their higher factor loadings in previous studies and relevance to experiences of physicians.[45,46] Based on extrapolation of the thresholds to categorize intensity of IP for the full instrument,[43] scores of 4 to 8, 9 to 12, 13 to 16, and 17 to 20 were considered to indicate minimal, moderate, frequent, and intense IP experiences. The population survey of workers in other fields included one item from the Clance Imposter Phenomenon Scale with the highest factor loading in previous studies ("I'm disappointed at times in my present accomplishments and think I should have accomplished much more") to enable comparison to physicians.[45]

Self-compassion was measured using the Clinician Self-valuation Scale.[17,18] To evaluate whether any of the 4 IP items assessed themes similar to the construct of the 4 items in the Self-valuation Scale, we calculated the Cronbach α for both scales and then conducted a principal component analysis with oblimin rotation and Kaiser normalization to determine underlying patterns between these 8 items. The Cronbach α was 0.84 for the 4 IP items and 0.82 for the 4-item Self-valuation Scale. Two components emerged from these 8 items: the 4 items from the IP scale clustered as one component and 4 items from the Self-valuation Scale clustered as the other component, suggesting self-valuation and IP are distinct constructs (Supplemental Table 1, available online at http://www.mayoclinicproceedings.org).

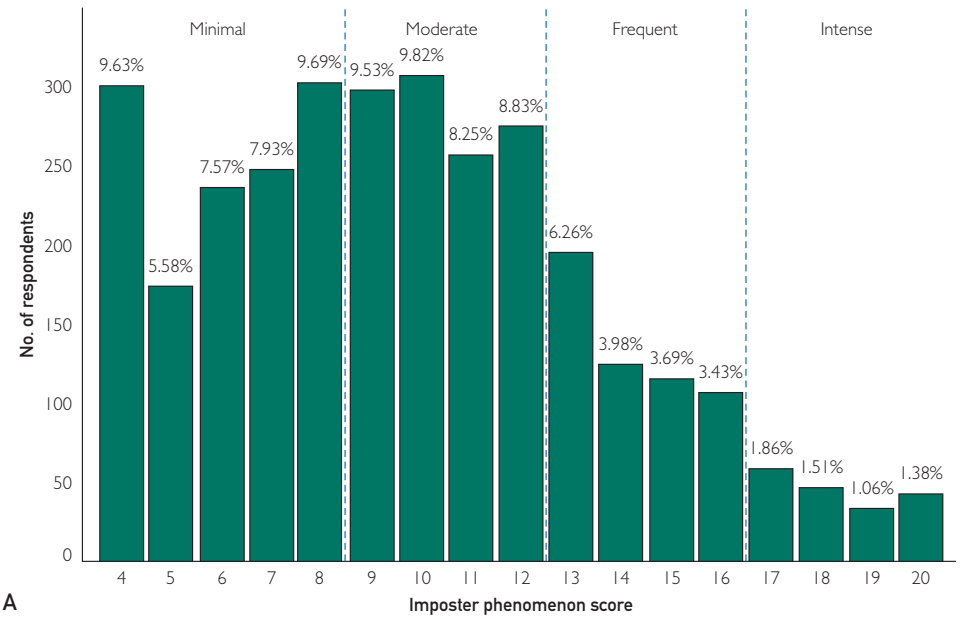
Statistical Analyses

Analyses were conducted in R (version 3.6.0, R Core Team, 2019), with all *P* values specified as 2-sided and results deemed statistically significant at $P<.05$. Standard descriptive summary statistics were used to characterize the physician and population samples. Continuous scores were compared using *t* tests for 2 groups and 1-way analysis of variance for 3 or more groups. Associations between IP scores and physician demographic characteristics were examined using multivariable linear regression. Multivariable logistic regressions were performed to identify personal and professional factors associated with burnout, professional fulfillment, and suicide ideation in physicians. For all comparisons between physicians and the US working population, physician data were restricted to responders between the ages of 29 and 65 and not retired to match the population sample. Differences between physician and population samples were analyzed using the nonparametric Wilcoxon rank sum test for continuous variables and χ^2 test for categorical variables. Multivariable ordered logistic regressions were also used to compare the responses from physicians and the US working population to the single-item IP item after controlling for personal and professional characteristics. For each instrument, scoring followed the standard, published approach.

RESULTS

Among the 3237 physicians invited to complete the subsurvey including the IP Scale, 3116 (96.3%) completed the IP questions; 4% (133) to 10% (308) of physicians endorsed each item as a "very true" characterization of their experience (Supplemental Table 2, available online at http://www.mayoclinicproceedings.org). The mean aggregate score on the IP items was 9.79 (range, 4 to 20; higher score indicated more severe IP experiences), with 1259 participants (40.4%), 1135 (36.4%), 541 (17.4%), and 181 (5.8%) having scores in the minimal, moderate, frequent, and intense IP range (Figure A).

Mean IP scores by demographic and professional characteristics are shown in Table 1. Mean IP scores were higher for women physicians than male physicians (mean, 10.91 vs 9.12; $P<.001$). Scores decreased with age and were lower among those who were married or widowed. With respect to professional characteristics, IP scores were greater among those in academic practice or working in the Veterans Health Administration Medical System and decreased with years in practice. The scores also varied by specialty, with highest scores among pediatric subspecialists, general pediatricians, and emergency medicine



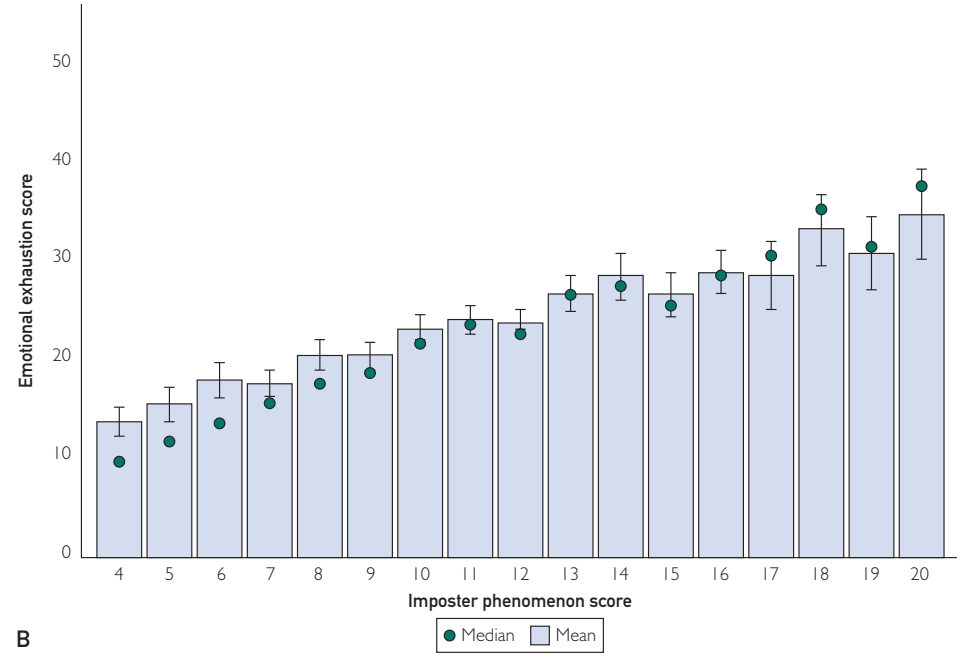


FIGURE. Relationship between imposter phenomenon and personal and occupational distress. A, Imposter phenomenon scale score distribution. Scores on the imposter phenomenon scale (range, 4 to 20) are shown on the x-axis; number of physicians are shown on the y-axis. Dashed vertical lines indicate the established thresholds to categorize responders into minimal, moderate, frequent, and intense imposter phenomenon categories. B, Imposter phenomenon scale score and emotional exhaustion. Scores on the imposter phenomenon scale (range, 4 to 20) are shown on the x-axis; mean emotional exhaustion score is shown on the y-axis. Error bars represent 95% CI of the mean. C, Imposter phenomenon scale score and depersonalization score. Scores on the imposter phenomenon scale (range, 4 to 20) are shown on the x-axis; mean depersonalization score is shown on the y-axis. Error bars represent 95% CI of the mean. D, Imposter phenomenon scale score and professional fulfillment. Scores on the imposter phenomenon scale (range, 4 to 20) are shown on the x-axis; mean professional fulfillment score is shown on the y-axis. Error bars represent 95% CI of the mean. E, Imposter phenomenon scale score and suicidal ideation. Scores on the imposter phenomenon scale (range, 4 to 20) are shown on the x-axis; percentage of physicians reporting suicidal ideation in the preceding 12 months is shown on the y-axis.

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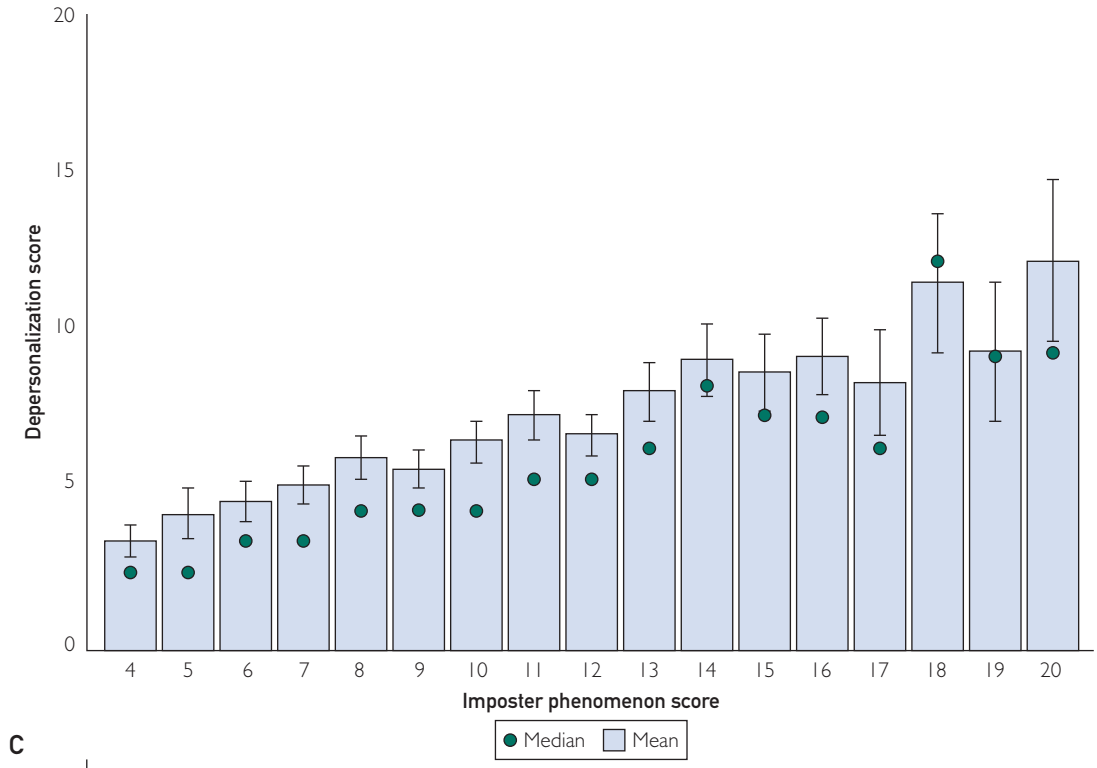

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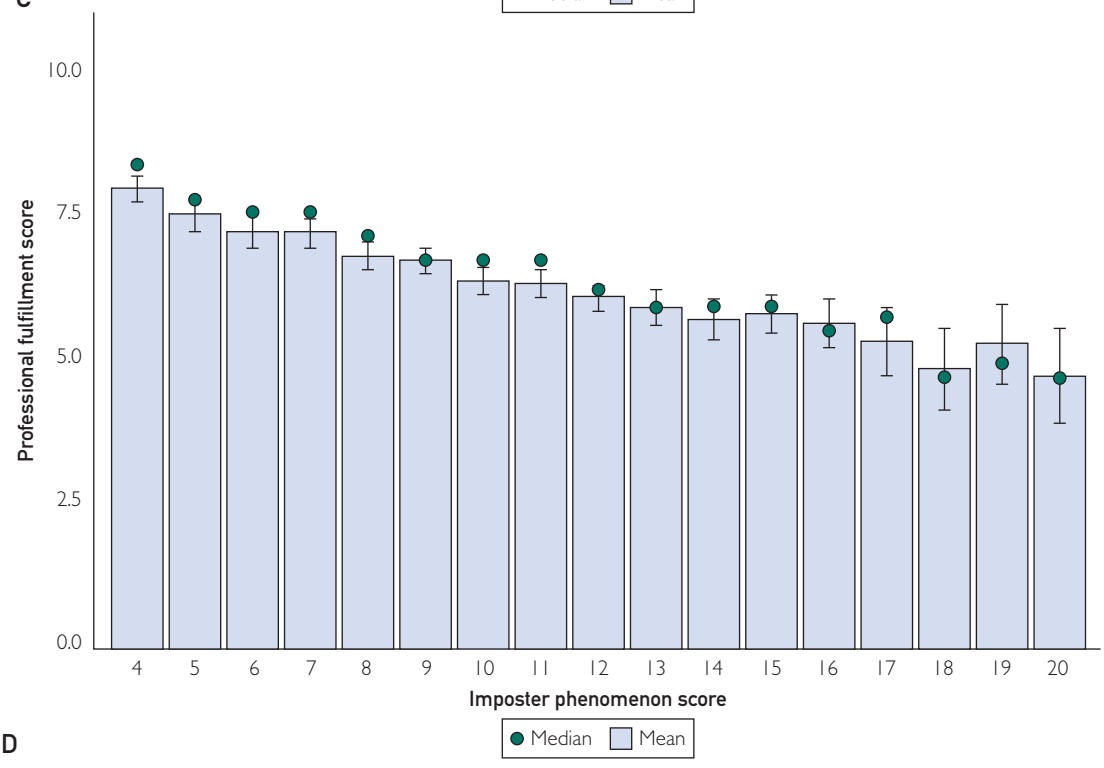

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FIGURE. Continued

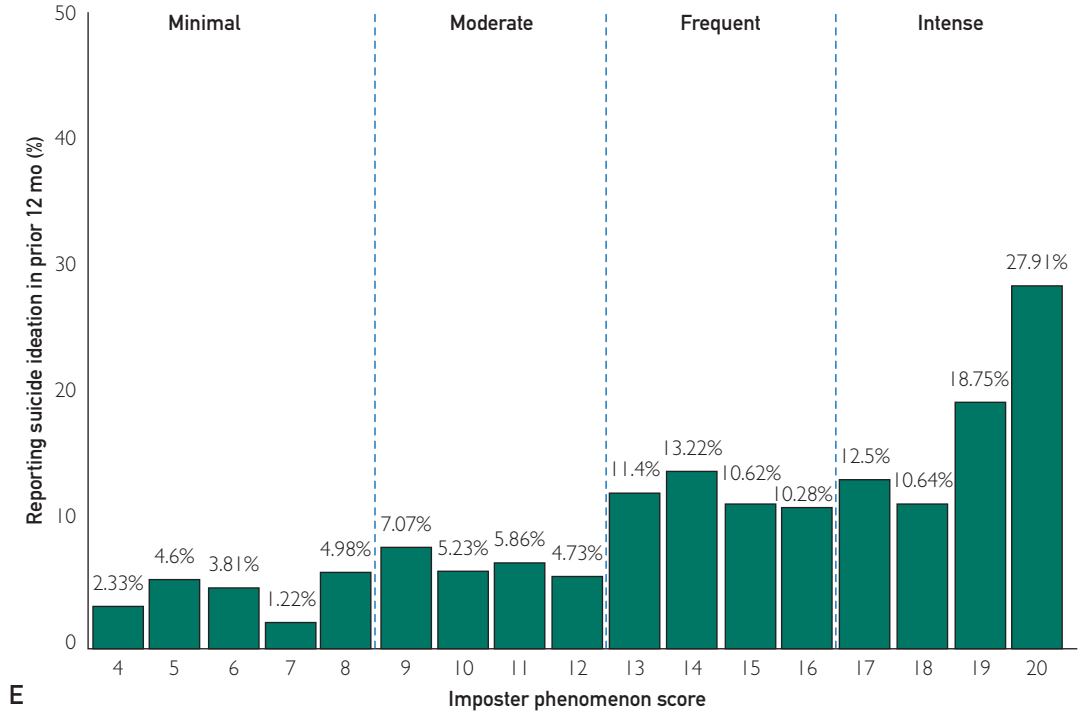

FIGURE. Continued

physicians and lowest scores among ophthalmologists, radiologists, and orthopedic surgeons. In multivariable linear regression including age, gender, relationship status, hours worked per week, practice setting, and specialty, aggregate IP scores were increased among women physicians (β=1.25; $P<.001$) as well as those who worked in an academic setting (β=0.35; $P=.03$) and were lower among those who were older (age group 55 to 64 and age group ≥65 vs age <35: β=−1.29; $P=.002$ and β=−2.02; $P<.001$, respectively), married (β=−1.02; $P<.001$) or widowed/widower (β=−2.23; $P<.001$), as well as those who practiced ophthalmology as a specialty (β=−0.88; $P=.02$) (Supplemental Table 3, available online at http://www.mayoclinicproceedings.org).

The relationship between IP scores and burnout, professional fulfillment, and suicidal ideation is presented in Table 2 and Supplemental Table 4 (available online at http://www.mayoclinicproceedings.org). Higher mean emotional exhaustion and depersonalization scores were observed among individuals with higher degrees of IP (Figure B and C). Professional fulfillment scores were lower among individuals with higher degrees of IP (Figure D). The prevalence of suicidal ideation increased with higher levels of IP, with a prevalence of 3.3%, 5.7%, 11.4%, and 16.9% among individuals with minimal, moderate, frequent, and intense IP (Figure E). Mean IP and self-valuation scores by specialty are presented in the Supplemental Figure (available online at http://www.mayoclinicproceedings.org) and suggest that some specialties may struggle with one dimension more so than the other.

Next, we conducted multivariable analysis exploring personal and professional factors independently associated with burnout, professional fulfillment, and suicidal ideation in physicians. Imposter phenomenon was independently associated with risk of burnout after adjusting for age, gender, relationship status, specialty, hours worked per week, practice setting, and self-valuation

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TABLE 1. Personal and Professional Characteristics and Imposter Phenomenon

Variable	No. (%) of participants	Mean imposter phenomenon score (SD; range 4-20)	*P* value
Age (y)			
<35	91 (3.0)	11.32 (4.39)	<.001
35-44	550 (18.2)	11.46 (4.18)	
45-54	835 (27.6)	10.10 (3.96)	
55-64	959 (31.7)	9.39 (3.56)	
≥65	591 (19.5)	8.32 (3.27)	
Missing	106 (3.4)	…	
Gender			
Male	1934 (61.9)	9.12 (3.63)	<.001
Female	1185 (38.0)	10.91 (4.06)	
Other	3 (0.1)	14.00 (4.24)	
Missing	10 (0.3)	…	
Relationship status			
Single	343 (11.0)	11.15 (3.96)	<.001
Married	2589 (83.0)	9.62 (3.83)	
Partnered	141 (4.5)	10.47 (4.11)	
Widowed or widower	46 (1.5)	7.60 (3.65)	
Missing	13 (0.4)	…	
Have children/age (y) of youngest child			
No children	447 (14.3)	10.87 (3.94)	<.001
<5	313 (10.0)	11.23 (4.35)	
5-12	554 (17.8)	10.56 (3.93)	
13-18	456 (14.6)	9.70 (3.93)	
19-22	331 (10.6)	9.26 (3.54)	
>22	1014 (32.6)	8.71 (3.42)	
Missing	17 (0.5)	…	
Specialty			
Anesthesiology	152 (4.9)	9.70 (3.65)	<.001
Dermatology	90 (2.9)	9.00 (4.15)	
Emergency medicine	165 (5.3)	10.43 (4.18)	
Family medicine	200 (6.4)	9.96 (3.62)	
General surgery	105 (3.4)	9.56 (3.57)	
General surgery subspecialty	241 (7.7)	9.19 (3.71)	
Internal medicine, general	208 (6.7)	10.04 (3.79)	
Internal medicine subspecialty	303 (9.7)	9.82 (3.76)	
Neurology	128 (4.1)	10.15 (4.48)	
Neurosurgery	28 (0.9)	9.41 (4.01)	
Obstetrics and gynecology	132 (4.2)	9.91 (4.13)	
Ophthalmology	135 (4.3)	8.64 (3.55)	
Orthopedic surgery	168 (5.4)	8.99 (3.38)	
Otolaryngology	35 (1.1)	10.31 (3.64)	
Other	192 (6.2)	9.58 (4.06)	
Pathology	79 (2.5)	10.25 (4.18)	
Pediatrics, general	170 (5.5)	10.51 (3.99)	
Pediatric subspecialty	100 (3.2)	10.95 (3.91)	
Physical medicine and rehabilitation	74 (2.4)	10.19 (3.60)	
Preventive/occupational medicine	13 (0.4)	10.23 (4.30)	
Psychiatry	233 (7.5)	10.19 (4.38)	
Radiation oncology	20 (0.6)	8.68 (3.02)	
Radiology	124 (4.0)	9.49 (3.53)	
Urology	17 (0.5)	9.59 (2.96)	

Continued on next page

TABLE 1. Continued

Variable	No. (%) of participants	Mean imposter phenomenon score (SD; range 4-20)	*P* value
Specialty, continued			
Missing	20 (0.6)	…	
Years in practice			
<5	238 (7.9)	11.48 (4.28)	<.001
5 to <10	299 (9.9)	11.22 (4.12)	
10 to <20	770 (25.4)	10.05 (3.93)	
20 to <30	847 (28.0)	9.59 (3.58)	
≥30	872 (28.8)	8.28 (3.28)	
Missing	106 (3.4)	…	
Hours worked per week			
<40	650 (20.9)	9.56 (3.80)	.42
40-49	702 (22.6)	9.78 (4.07)	
50-59	766 (24.6)	9.91 (3.88)	
60-69	641 (20.6)	9.96 (3.88)	
70-79	166 (5.3)	9.54 (3.66)	
≥80	187 (6.0)	9.88 (3.77)	
Missing	20 (0.6)	…	
Primary practice setting			
Private practice	1808 (58.0)	9.49 (3.80)	<.001
Academic medical center	872 (28.0)	10.30 (4.02)	
Veterans hospital	56 (1.8)	10.64 (3.95)	
Active military practice	14 (0.4)	9.50 (3.84)	
Other	369 (11.8)	9.91 (3.88)	
Missing	13 (0.4)	…	

score (Supplemental Table 5, available online at http://www.mayoclinicproceedings.org). Relative to those with low IP scores, the odds ratio (OR) for burnout among those with moderate, frequent, and intense IP was 1.28 (95% CI, 1.04 to 1.58), 1.79 (95% CI, 1.38 to 2.32), and 2.13 (95% CI, 1.43 to 3.19), respectively. Imposter phenomenon was also independently associated with low professional fulfillment after adjusting for the same factors. Relative to those with low IP scores, the OR for high professional fulfillment among those with moderate, frequent, and intense IP was 0.58 (95% CI, 0.48 to 0.70), 0.41 (95% CI, 0.31 to 0.53), and 0.40 (95% CI, 0.26 to 0.62), respectively. Imposter phenomenon was also independently associated with SI. Relative to those with low IP scores, the OR for SI among those with moderate, frequent, and intense IP was 1.29 (95% CI, 0.86 to 1.97), 2.21 (95% CI, 1.41 to 3.49), and 2.62 (95% CI, 1.46 to 4.65), respectively.

Finally, we compared physicians to workers in other fields on the single item from the IP scale included on the population survey of US workers in other fields (ie response to the item, "I am disappointed at times in my present accomplishments and think I should have accomplished more"). Demographic differences between the physician and general population samples are shown in Supplemental Table 6 (available online at http://www.mayoclinicproceedings.org). A higher percentage of physicians were in the "Often" and "Very true" categories on the single-item IP measure (27.4% [689 of 2514] vs 18.4% [461 of 2505]; $P<.001$). Physicians remained more likely to be disappointed in present accomplishments relative to workers in other fields (OR, 1.31; 95% CI, 1.17 to 1.47) after adjusting for age, gender, relationship status, hours worked per week, and self-valuation. Physicians were also at higher risk for IP (OR, 1.81; 95% CI, 1.32 to 2.48) when the

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TABLE 2. Imposter Phenomenon[a] and Physician Distress

Variable	Minimal imposter phenomenon (n=1259)	Moderate imposter phenomenon (n=1135)	Frequent imposter phenomenon (n=541)	Intense imposter phenomenon (n=181)	*P* value
Burnout					
Emotional exhaustion (range 0-54), mean (SD)	16.50 (12.71)	22.14 (12.36)	26.96 (12.27)	31.08 (12.92)	<.001
Depersonalization (range 0-30), mean (SD)	4.35 (5.31)	6.23 (5.76)	8.41 (6.52)	10.05 (7.31)	<.001
No. (%) overall burnout[b]	304 (24.4)	456 (40.4)	301 (56.8)	125 (69.1)	<.001
Professional fulfillment					
Professional fulfillment (range 0-10), mean (SD)	7.26 (2.10)	6.29 (2.07)	5.68 (2.07)	4.93 (2.35)	<.001
Suicidal ideation					
No. (%) suicidal ideation in prior 12 mo	42 (3.3)	65 (5.7)	61 (11.4)	30 (16.9)	<.001

[a]Scores of ≤8, 9-12, 13-16, and ≥17 are considered to indicate minimal, moderate, frequent, and intense imposter phenomenon experiences.
[b]As assessed using the full EE and DP scales of the Maslach Burnout Inventory. High score on emotional exhaustion and/or depersonalization subscales of the Maslach Burnout Inventory (see Participants and Methods section). Per the traditional scoring of the Maslach Burnout Inventory for health care workers, physicians with scores of ≥27 on the emotional exhaustion subscale and ≥10 on the depersonalization subscale have a high degree of burnout in that dimension.

multivariable analysis was limited to individuals in the US working population with doctoral or equivalent degrees.

DISCUSSION

We report the first large study of the IP among practicing physicians in the United States. Feelings of IP were common, with nearly 1 in 4 physicians (23%) reporting frequent or intense IP experiences in one or more domain. The IP experiences were more severe among women physicians, younger physicians, and those in Veterans Health Administration or academic practice settings. Variability in severity of IP by specialty was also observed. Imposter phenomenon had large, statistically significant associations with multiple dimensions of occupational distress. IP scores strongly correlated with both the emotional exhaustion and depersonalization domains of burnout and inversely correlated with professional fulfillment. The association of IP with burnout and professional fulfillment persisted on multivariable analysis adjusting for age, gender, relationship status, specialty, hours worked per week, practice setting, and self-valuation score. The IP scores also strongly correlated with suicidal ideation, with a higher prevalence of suicidal ideation among individuals with a higher IP scores.

Notably, physicians had more frequent experiences of feeling disappointment at times in current accomplishments, reflective of IP, than workers in other fields, an observation that persisted on multivariable analysis. These findings might seem surprising given the high level of education and professional stature of physicians. However, they may reflect the challenges of working with a highly accomplished peer group combined with some of the professional norms of medical culture. These norms have traditionally cultivated perfectionistic and unrealistic personal expectations, suggested physicians should be impervious to normal human limitations, and transmitted that seeking help is a sign of weakness.[20] These cultural norms of the profession often result in a lack of vulnerability with colleagues, which can lead individual physicians to believe that they are the only one struggling. These beliefs can also contribute to isolation and experiences of IP that may reinforce a lack of vulnerability with colleagues.

The increased prevalence of IP among women physicians is notable and indicates an additional dimension that may contribute to higher rates of burnout for women

physicians. Although some previous studies have suggested that women may be at higher risk for IP, this finding has not been consistent in all occupations and settings. One recent systematic review reported that 16 of 33 studies comparing rates of IP by gender found higher rates for women while 17 did not.[22] Studies in academic faculty also suggested that women and men deal with IP differently, with women more likely to use active, constructive coping approaches that relied on social support and correcting cognitive distortions and men more likely to rely on less constructive avoidant coping approaches.[47,48] Further study of the role IP and associated coping approaches play in the differences between men and women physicians is warranted.

The relationship between IP and self-valuation scores in the present study also provides notable insights. Both IP and self-valuation scores were independently associated with burnout and professional fulfillment on multivariable analysis. These data suggest that these distinct occupational risk factors may represent separate targets for intervention.

How do these findings compare with those of previous studies? Studies of US medical students suggest that 20% to 50% of US medical students have substantial IP expereinces,[28,31,49] with some studies indicating higher scores in women medical students than men.[28,31,49] A similar prevalence has been observed in US residents.[50,51] A longitudinal study of US medical students found that IP scores increased between matriculation and the end of third-year clerkships.[52] Multiple studies suggested a relationship between IP and anxiety,[50] depression,[50] burnout,[28,30,51] and other forms of distress.[49] There are limited published data on IP in practicing physicians,[30,48,51] with much of the available data derived from qualitative studies.[33,47] Collectively, the available evidence suggests that, for many physicians, IP experiences develop early in medical school and residency and persist long after training is complete. This issue may be yet another vestige of a suboptimal training environment and habits and attitudes developed early in a career persisting later in a career. It is encouraging that both the present study and one prior report[23] suggest that IP symptoms decrease the longer physicians have been in practice.

Given the high prevalence of IP experiences in physicians, intentional efforts to mitigate this phenomenon are needed at the level of the profession, health care organizations, and individual physicians.[32] These efforts should include debunking collective attitudes that cast physicians as superhuman, position work perpetually above basic human needs, and stigmatize help-seeking as weakness. Such attitudes can be replaced with a culture of authenticity and vulnerability during the medical school and residency training process as well as deliberate approaches to reduce IP among physicians in practice.[11,32,53] Tactics to advance these aims might include COMPASS (Colleagues Meeting to Promote and Sustain Satisfaction) groups,[54,55] storytelling events,[56,57] sharing of personal narratives,[12,58-60] and small group discussions.[30,61] Senior physicians discussing challenging times in their career and sharing their "failure resume" during department meetings or other forums can also be a useful approach to illustrate to junior physicians that many of their role models have also faced challenges throughout their career.[62] Professional norms that suggest physicians should be superhuman or neglect personal needs must be altered.[53] Overt efforts to normalize help-seeking and reduce stigma will also be important.[11,12,53] Mindsets of perfectionism and "unforgiving excellence" can also become ingrained in the culture of organizations.[10,63] Deliberate and sustained efforts to evolve an organizational culture of perfectionism to an organizational culture of excellence and growth mindset may be required in such situations.[63]

Our study is subject to several limitations. First, although we studied a large sample of US physicians and the results of a secondary survey suggested that participants were representative of US physicians,[34] response bias is nonetheless a concern. In this regard, it is unknown whether individuals with IP would be more or less likely to participate in the

survey. Although response bias may impact our estimates of IP prevalence, they are less likely to influence the analyses of the relationship between IP and personal and professional characteristics or its relationship with burnout, professional fulfillment, and suicidal ideation. Second, although the Clance Imposter Phenomenon Scale is the most established and widely used scale to assess IP,[23,44] we used an abbreviated version of the scale that only included items from the "fake" subscale, which does not capture IP experiences as comprehensively as the complete scale that includes the 2 additional subscales of "luck" and "discount." Due to survey length restrictions, we only had a single item from this scale in the survey of the general US working population, which limits the comparison of physicians to workers in other fields. Third, while the association of IP with SI is consistent with other studies,[31] the present analysis does not account for depression, other mental health conditions, or other factors that may also contribute to SI. Finally, our data are cross-sectional and we are unable to determine causation or the potential direction of effect between some of the dimensions assessed.

CONCLUSION

This large national study found frequent IP experiences among US physicians. Experiences of IP were more prevalent among physicians than workers in other fields and were associated with increased rates of burnout, lower levels of professional fulfillment, and a higher prevalence of suicidal ideation. These findings add to the literature on IP among medical students and residents and suggest that this phenomenon, which often occurs early in the physician training progress, also afflicts many practicing physicians. Holistic efforts to address the professional norms, perfectionistic attitudes, and system factors that contribute to this phenomenon are necessary to reduce the prevalence of IP and the associated personal and occupational distress. Efforts to instill a growth mindset during the training process, reduce the stigma associated with help-seeking, and create a culture of vulnerability with colleagues will likely be critical to these efforts.

POTENTIAL COMPETING INTERESTS

Dr Carlasare is employed by the American Medical Association, Dr Trockle is a consultant with Mavin Behavioral Health Inc., Dr Tutty is a Board Member for Emergence Healthcare group, Drs Dyrbye and Shanafelt are co-inventors of the Well-being Index instruments (Physician Well-being Index, Nurse Well-being Index, Medical Student Well-being Index, the Well-being Index). Mayo Clinic holds the copyright for these instruments and has licensed them for use outside of Mayo Clinic. Mayo Clinic pays Drs Shanafelt and Dyrbye a portion of any royalties received. Dr Shanafelt is co-inventor of the Participatory Management Leadership Index. Mayo Clinic holds the copyright for this instrument and has licensed it for use outside of Mayo Clinic. Mayo Clinic pays Dr Shanafelt a portion of any royalties received. Drs Shanafelt and Dyrbye report receiving honoraria for presentations and provide advising for health care organizations. Dr Dyrbye reports receiving funding support from the National Science Foundation,all other authors declare no competing interest.

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SUPPLEMENTAL ONLINE MATERIAL

Supplemental material can be found online at http://www.mayoclinicproceedings.org. Supplemental material attached to journal articles has not been edited, and the authors take responsibility for the accuracy of all data.

Abbreviations and Acronyms: IP, imposter phenomenon; **OR,** odds ratio; **SI,** suicidal ideation

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