High Prevalence of Imposterism Among Female Harvard Medical and Dental Students

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INTRODUCTION

The imposter phenomenon (IP) is a psychological construct characterized by feelings of inadequacy and an irrational fear of being discovered as a “fraud” by colleagues and superiors. IP limits performance and is associated with anxiety, burnout, and low self-esteem across multiple professions and academic spheres. First described by psychologists Clance and Imes in 1978, IP was initially found to affect high-achieving women who believed that they were not as intelligent or capable as others believed.¹

There is a small literature on IP in academic medicine and dentistry; however, robust data is lacking and existing studies are limited by small sample sizes or use of non-validated survey instruments.^{2, 3}

Here we report the largest study to date of IP among undergraduate medical and dental students, investigating risk factors for IP and focusing in particular on students with the highest levels of imposterism.

METHODS

Surveys were emailed to all Harvard Medical School (HMS) and Harvard School of Dental Medicine (HSDM) students ($n = 753$)

between June and August 2018 using a web-based program (Qualtrics). The study was deemed exempt by the Institutional Review Boards of HMS and Massachusetts General Hospital.

IP Questionnaire

Students were asked to complete the 20-question validated Clance Imposter Phenomenon Scale (CIPS), with responses scaled from 1 (not at all true) to 5 (very true). Higher scores on the CIPS are associated with greater feelings of imposterism. An example CIPS question is as follows: “I can give the impression that I’m more competent than I really am.” In order to emphasize those respondents with the highest degree of imposterism, we defined IP as a score of 80 or higher, which corresponds to “intense IP” in the original publication of CIPS.¹

Statistical Analyses

We used univariate and multivariable logistic regression to assess the association between student characteristics and IP. All comparisons were two tailed, with $P < 0.05$ considered significant.

RESULTS

Demographic characteristics are shown in Table 1. Among the 753 students who received the survey, 485 completed all CIPS questions (64%). The mean age of the respondents was 25 (range, 21 to 34) years. Of those that completed the CIPS questions, 37% were male, 52% were female, and 11% did not indicate their gender.

The mean CIPS score across all students was 65 (standard deviation, 13), with the distribution of IP scores according to male and female gender shown in Figure 1 a and b respectively. Overall, 15% of students had a score of 80 or higher and thus met the criteria for intense IP. The prevalence of intense IP was 11% among males and 18% among females.]→

Univariate predictors of IP included age (years, odds ratio [OR] 1.11, 95% confidence interval [CI] 1.02–1.22), female gender (OR 1.95, 95% CI 1.15–3.31), and time off prior to medical

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Figure 1 a–d Female gender is a predictor of IP among Harvard medical and dental students. The distribution of CIPS scores among men (a) and women (b) is shown. The X-axes indicate the CIPS score and the Y-axes represent the number of students with a particular CIPS score, both total count (leftward Y-axis) and cumulative percentage (rightward Y-axis). Black bars indicate total raw count and gray lines depict cumulative percentage. Forest plots depict univariate (c) and multivariate (d) predictors of IP. CIPS, Clance Imposter Phenomenon Scale; IP, imposter phenomenon.

school (OR 1.77, 95% CI 1.07–2.93) (Fig. 1c). In multivariable models, female gender remained the only independent predictor of intense IP (OR 1.92, 95% CI 1.12–3.27; Fig. 1d).

DISCUSSION

The aim of this study was to investigate the prevalence and predictors of IP among HMS and HSDM students. We found

that nearly 15% of all students in our sample scored above 80 on the CIPS scale, indicating severe imposterism. In multivariable-adjusted models, female gender was the sole significant predictor of intense IP, conferring a nearly twofold higher risk.

IP is pervasive within the health professions and likely under-reported.⁴ Although older studies have found a higher prevalence of IP among female medical and dental students,⁵ there is still much to be done in tackling this issue. Some

Table 1 Student Characteristics

Sociodemographic characteristics	
Mean age, years (SD)	25 (3)
Male, <i>n</i> (%)	179 (37)
Race/ethnicity, <i>n</i> (%)	
White	205 (46)
Asian	158 (36)
Black	20 (5)
Other ^a	56 (13)
Hispanic or Latino	43 (10)
Family member is a physician, <i>n</i> (%)	135 (31)
Medical/dental school characteristics	
Track at Harvard, <i>n</i> (%)	
Medical School	343 (83)
School of Dental Medicine	72 (17)
PhD	48 (11)
Year at Harvard, <i>n</i> (%)	
1st	106 (24)
2nd	113 (26)
3rd	68 (16)
4th	88 (20)
5th or greater ^b	60 (14)
Career characteristics	
College major, <i>n</i> (%)	
(a) Biological or Physical Sciences	273 (63)
(a) Humanities, Social Sciences, or other	109 (25)
Double major from (a) and (b) above	53 (12)
Surgical Career Aspirations, <i>n</i> (%)	134 (31)

Percentages are calculated on the basis of the number of students without missing data. Students could select multiple races/ethnicities.

CIPS, Clance Imposter Phenomenon Scale; SD, standard deviation

^aIncludes students who indicated their race as "other" as well as students who identified as American Indian, Alaskan Native, or multiple races

^bStudents who elected to spend a fifth year completing research or an additional degree

authors have suggested that IP must be addressed on an organizational level: cultivating female mentors and role models and encouraging leadership training.⁶ Further, we suggest exploring individual factors that foster confidence and resilience. For instance, we might pursue additional analyses of those women without intense IP—what tools have they

developed in order to avoid the pitfalls of severe imposterism? Finally, it is important to normalize IP, with frequent and open dialogue and discussion: too often trainees suffer in silence. Only by recognizing the weed of IP and addressing it at its source, we will be able to grow as a healthcare profession.

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Compliance with ethical standards:

Conflict of Interest: The authors declare that they do not have a conflict of interest.

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