BRIEF

Impostor Phenomenon in Undergraduates and Pharmacy Students at a Small Private University

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Objective. The purpose of the study was to observe the prevalence of impostor phenomenon (IP) among students attending Ohio Northern University, and assess secondary factors that impact the severity of IP.

Method. Using the validated Clance Impostor Phenomenon Scale the incidence of IP was assessed at Ohio Northern University (ONU). The investigators hypothesized that students enrolled in the College of Pharmacy would demonstrate more intense levels of IP than students enrolled in other majors within the University.

Results. 391 students of the approximately 3100 students (12.6%) completed the survey and qualified for the study. Students for this study were recruited via email. This method was utilized for two reasons; it was the best way to reach the entirety of the student body and at this time, students were transitioning from campus to home due to the COVID-19 pandemic. Out of a total possible score of 100, all colleges scored an average IP score between 68 and 75. These scores are interpreted as “frequently experiences impostor feelings.” No statistical significance in scores was found by college, gender, ethnicity/race, year in school, or specific major.

Conclusion. Impostor phenomenon is common at Ohio Northern University and does not discriminate by college, age, gender, race/ethnicity, year in school, or academic major. There is a need for external intervention to educate students on the impact of IP and reduce the impact. Interventions should be targeted to all students enrolled at the University regardless of educational program or other demographics.

Keywords: impostor phenomenon, impostor syndrome

INTRODUCTION

Impostor phenomenon (IP), also referred to as imposter syndrome, occurs in high achieving individuals with difficulty internalizing and accepting successes. IP was originally described by Clance and Imes in 1978 in high-achieving women.¹ It has since been accepted that IP can affect any individual regardless of demographic factors. Individuals with IP often attribute their successes to chance or luck rather than hard work and ability. Many individuals with IP do not feel they deserve their own accomplishments and fear others will eventually view them as a fraud.² Individuals suffering from IP internally struggle to accept positive feedback and dismiss accolades due to the misconception that those around them have a falsely high impression of their abilities.³

IP has been linked with negative mental health outcomes. Individuals with IP may feel that anything short of perfection is failure, success that requires hard work and perseverance lacks authenticity, successes utilizing resources or a team approach are not valid, and the inability to juggle numerous responsibilities without setbacks is failure.^{3,4} These feelings create a detrimental circular model of perceived failure, anxiety, and need for perfection. Previous studies have linked IP to depression, anxiety, perfectionism, and low self-esteem.⁴⁻⁷ Those with IP usually suffer quietly to not unmask themselves as a fraud, the topic has become more public in recent years as notables such as Natalie Portman, Sheryl Sandberg, and Justice Sonia Sotomayor have spoken out regarding their struggles.^{8,9}

Research has evaluated IP in students pursuing careers in medicine, dentistry, nursing, and veterinary practice.¹⁰⁻²⁴ As early as 1998, IP was studied in health profession students.¹⁰ Two decades of research has demonstrated a high level of IP among health professionals and students. The literature shows IP is more common in high achieving and high IQ individuals. There is significant literature nationally and internationally in regards to medical students and residents. These studies found that IP is prevalent and consistently higher in females than males.¹¹⁻¹⁵ IP has been correlated with depression, anxiety and stress.¹² Individuals with IP experience higher rates of professional burnout than those who do not.¹³ Longitudinal studies among medical students have demonstrated that IP scores increase over time as students gain more knowledge and training, although other wellness criteria such as professional identity, wellness, and professional

calling improve.^{15,16} Similar trends have been found among dental students, chiropractic students, nursing students, and veterinary practitioners.¹⁷⁻²²

Although studies are recognizing IP in health professions, limited studies have evaluated pharmacy students. The 1998 study from the Medical College of South Carolina included pharmacy students and showed a high rate of IP within a small sample.¹⁰ Henning and colleagues evaluated 477 students in medicine, dentistry, nursing, and pharmacy. IP was assessed with the Clance Impostor Phenomenon Scale (CIPS). This study correlated psychological distress and perfectionism with feelings of IP. Pharmacy students reported the highest level of psychological distress at a rate of about 50%. The authors recommended health students could benefit from screening and evaluation for intervention programs that improve IP feelings. Thirty years later, Boyle and colleagues evaluated IP in Doctor of Pharmacy students and pharmacy faculty at two colleges of pharmacy utilizing CIPS. The overall CIPS mean score for respondents was 63.8 with a standard deviation of 15.1 with the student mean of 64.3 and 61.2 for the faculty.²³ A cross-sectional study evaluated the prevalence of IP in PGY-1 and PGY-2 residents. Most of the survey respondents were PGY-1 residents, female and single with no children. The mean CIPS score was 64 with a standard deviation of 15. The study did not find a statistically significant difference in CIPS scores between males and females. The researchers concluded that pharmacy residents display a high level of IP with a significant level of distress that warrants further investigation on personal and professional well-being.²³ Literature supporting interventions to improve IP have been published in other fields but have not been studied in pharmacy. A workshop for medical professionals including students, residents, fellows, faculty, staff, and program leadership was designed to improve IP. The workshop was successful in opening a dialog on effective strategies to address IP at the individual, peer, and institutional levels. The workshop created suggestions for improvement of IP and barriers. The workshop evaluated the usefulness of the day for the participants.²⁵ A one-day workshop for clinical nurse specialists provided a means to engage and discuss reasons for high IP among nurses. The program was designed to help those with IP feel empowered and provide strategies to reduce the feelings. The workshop evaluations indicated this was a valuable experience.²⁶

Due to limited literature regarding IP prevalence and impact in pharmacy students, this research focused on evaluating the prevalence of IP in pharmacy students who attend a private 0-6 college of pharmacy and compare the data to students on campus.

Objective

The purpose of the study was to observe the prevalence of IP among students attending Ohio Northern University. Secondary objectives included determining prevalence of IP by student age and gender. Another secondary variable was a comparison of mean CIPS student scores between the five colleges.

METHODS

Ohio Northern University includes five colleges: Arts and Sciences, Business Administration, Engineering, Law, and Pharmacy. All colleges enroll undergraduate students with the exception of the College of Law. The College of Pharmacy is a 0-6 program which enrolls students directly from high school to achieve a Doctor of Pharmacy in six years, and therefore, students can be classified as both undergraduate and graduate level depending on the year of training. The Clance IP Scale, available at <https://www.paulinerooseclance.com/pdf/IPscoringtest.pdf>, was distributed with permission to the campus from January 14, 2020 until February 14, 2020 by Qualtrics^{XM} electronic survey platform. All students at the University were invited to participate through the University email addresses and would receive information on their personalized IP score and how to interpret the results. The interpretation criteria can be found in Table 1. Inclusion criteria for the study population included age ≥ 18 years, enrolled as a current Ohio Northern University student, and English proficient. All communications to the students about the survey, including the introduction to the survey itself, described that the survey in Qualtrics^{XM} was completely anonymous with no identifiable information being tracked to reduce the effect of social desirability bias. Before answering the survey questions, students were asked demographic information, which are summarized in Table 2. Data were analyzed using SPSSv27 (2020) statistical software. This study was deemed exempt by the University Institutional Review Board. Descriptive and inferential statistics were utilized to evaluate the data. Descriptive statistics included frequencies, means, and standard deviations. ANOVA with Tukey post hoc comparisons were performed to evaluate the mean CIPS scores for the five colleges. A t-test compared mean scores between the College of Pharmacy and the other colleges combined as one group. A t-test compared mean score results between male and female respondents.

RESULTS

Three hundred ninety-one students of the approximately 3100 students (12.6%) completed the survey and qualified for the study. Survey collection occurred during a transition from on-campus to distance learning due to the

COVID-19 pandemic, and limited the response rate due to external stress on the campus community. Survey results can be seen in Table 2. Out of a total score of 100 on the scale, the mean score for all colleges was between a 68 and 75. These scores can be interpreted as “frequently experiences impostor feelings”. The differences between the average scores of the colleges was not statistically significant with a p -value of 0.29 for the ANOVA test comparing all 5 colleges. The p -value of 0.07 was not statistically significant when comparing the pharmacy college mean score with the mean of the other colleges combined into one group. The average IP score by gender ($p = 0.76$) and by age ($p = 0.67$), were found to lack statistical significance when observing students who scored “frequently experiences impostor feelings.” An analysis was conducted to evaluate potential differences in mean scores by ethnicity/race and year in school with no statistical significant differences found.

DISCUSSION

Overall, the average IP score for all students was 69.27. This score is indicative of “frequently experiencing impostor feelings,” according to the Clance IP scale. Roughly 48% of all participants in this study were College of Pharmacy students, which represents a quarter of the student population attending the University. The mean IP score for student pharmacists was 67.99. This is similar to recent findings from Boyle, et al. that found an overall mean IP score of 63.8 for pharmacy students and faculty at two colleges of pharmacy.²⁴ Both studies indicate that pharmacy students are scoring as “frequently experiencing impostor feelings.”

Other health professional studies frequently found that women had higher IP scores than men. The Boyle study did not evaluate differences by gender. This study found that there was no statistical difference with gender. It could be hypothesized that the strenuous curriculum associated with pharmacy is a prominent factor that accounts for no statistical difference by gender. In comparison to other health professions studies, our study explores additional factors. Other health professions studies, including the Boyle study, did not compare pharmacy students to other students on campus with different majors. Our study found no difference in IP among colleges. This could likely be attributed to a private university with rigorous programs. This information is consistent with IP being present at high levels in undergraduate programs with talented undergraduates as studied by Lee who found an undergraduate IP mean of 64.24 with a standard deviation of 14.36.²⁷ This score is interpreted as a moderate level of IP and is consistent with both the Boyle study and this study including pharmacy students as well as other majors.

The hypothesis was that students in the College of Pharmacy would have a higher CIPS than students in other undergraduate and law programs. We failed to accept this hypothesis and more research needs to be conducted to identify causation of IP in students. One limitation of the study was the lack of diversity in the University population. Most students sampled were of similar age and ethnic group. Most health care IP studies lack diversity in the study populations. A potential for non-response bias exists as a limitation. The authors attempted to minimize non-response bias by allowing a 1-month response time frame. A statistical comparison was performed on the mean CIPS of early responders compared to late responders. The results showed no statistically significant difference between responses ($p = 0.887$). The study is also limited by the survey being distributed to students at a single private University. The study results may not have external validity to be applicable to campuses of other types.

Partnership with other institutions to increase sample size and improve diversity could evaluate the impact of IP in diverse populations. With a larger and more diverse population, we could explore the rates of IP among first generation and non-first-generation students. Future studies are needed to improve student confidence in knowledge and to prepare them for careers while finding ways to reduce IP. Next steps include focus groups on the impact of IP and methods, if any, that have been utilized to alleviate associated stress. The ultimate goal is to work with the University to formulate a response to assist students in managing IP.

CONCLUSION

This research found that IP is common on the campus and does not discriminate by college, age, gender, race/ethnicity, year in school, or academic major. There is a need for intervention and education on the impact of IP to reduce the stress of student life. Interventions should be targeted to all students enrolled regardless of educational program or demographics.

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Table 1. Clance Imposter Phenomenon Scale Scoring Criteria Description

Score	Meaning of Score
≤ 40	Few Imposter Characteristics
41-60	Moderate IP Experiences
61-80	Frequently experiences imposter feelings
> 80	Often has intense IP experiences

Abbreviations: IP=Imposter Phenomenon

Table 2. Participant Demographic Information and Average IP Scores Reported per Specific Demographics

Variables	Mean (%) Frequency Overall (n=391)	Average IP Overall (69)	No. of Responses Scoring < 40	No. of Responses Scoring > 80	p value
Gender					0.76
Female	262 (67.0)	69	8	66	
Male	125 (32.0)	69	2	32	
Other	4 (1.0)	78	0	0	
Age					0.67
18-21	275 (70.3)	70	2	66	
22-25	96 (24.6)	67	2	30	
26-29	9 (2.3)	74	0	1	
> 30	9 (2.3)	70	1	1	
College					0.29
Pharmacy	189 (48.3)	68	8	44	
Arts and Sciences	113 (28.9)	71	0	32	
Engineering	55 (14.1)	70	0	14	
Business	20 (5.1)	68	0	3	
Law	11 (2.8)	75	0	5	

Abbreviations: IP=Imposter phenomenon