

I'm in! So why don't I fit in? A cross-sectional exploration of imposterism within medical school cohorts

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Abstract

Background

Transitioning within medical school to new responsibilities and challenges represents a significant change in responsibility in the life of a physician. Many individuals in healthcare experience the imposter phenomenon, including medical students, fearing exposure as a fraud. Identifying when imposterism may peak during training, historical social determinants, and personal history that can lead to the overall imposter syndrome are critical, as during medical school, student wellness and professional identity typically decrease. This study aims to characterize the imposter phenomenon in medical students at a single institution as they transition from one academic year to the next.

Methods

This study is a cross-sectional observational design. We constructed a 30-item survey using the Clance Imposterism Scale survey and selected demographic characteristics. Indicators of interest include environment of upbringing, education, socioeconomic status, and race/ethnicity. We analyzed the data using Pearson's Chi-Square and Fisher Exact tests and a two-tailed Type I error of less than 5% to assess statistical significance.

Results

Out of 387 students, we received 89 responses for a response rate of 23%. 4th-year medical students reported more feelings of imposterism at the frequent or intense level compared to the first three years. Females had frequent/intense levels of imposterism more than males or non-conforming individuals. More than three-fourths of individuals raised in rural areas experienced frequent to intense imposterism compared to those raised in a suburban or urban environment. Completing an undergraduate degree with dedicated mentoring from physicians did not ameliorate feelings of not belonging.

Conclusion

We characterized medical students by cohort to identify points of intervention. Our findings highlight the importance of addressing the imposter phenomenon, especially in environments like medical school, where the expectations to excel may be intense. Recognizing that certain groups, such as females, underrepresented minorities, and first-generation college students, may be more susceptible to these feelings is an important step toward providing support and resources tailored to their needs.

BACKGROUND

The imposter phenomenon (also referred to as imposter syndrome) is a *“relatively well-recognized situation wherein highly successful individuals attribute their success to external factors (such as luck, knowing the right people, or being in the right place at the right time).”*¹ A recent scoping review found the imposter phenomenon relatively common.² Many individuals in healthcare experience the imposter phenomenon, fearing exposure as a fraud.¹ Identities can be constructed by individuals adopting, rejecting, or combining elements of a new environment such as medical school.

First-year students may differ according to their background. Transitioning within medical school to new responsibilities and challenges represents a significant change in responsibility in the life of a physician. *“Periods of transition and uncertainty are particularly challenging to an individual’s sense of identity.”*³ Foundational changes in day-to-day responsibilities likely impact an individual’s sense of identity and may contribute to elements of imposterism. The response to the shift from student to almost physician is likely highly variable and intensely personal. Some individuals may struggle with multiple personal, social, physical, and emotional issues, while others may appear to be ‘unscathed.’

Identity adaptations may occur in several different ways, including (1) absorption (change in self), (2) determination (change in role), (3) exploration (change in both), or (4) Replication (change in neither).⁴ Social identity theory suggests that *“varying degrees of exploration and commitment contribute to identity formation, particularly during times of uncertainty and transition.”*⁵ Individuals are subject to the influence of culture and environment in shaping their attitudes and behaviors. *“Identity is realized through a dynamic process of identification by which individuals classify their place in the world as both individuals and members of collectives.”*⁶ Framing our findings in the context of social developmental theory allows us to identify common themes that help develop a holistic approach to addressing imposterism in the context of healthy professional identity formation in medical students. This study aims to characterize the imposter phenomenon in medical students at a single institution as they transition from one academic year to the next.

METHODOLOGY

Design

We surveyed 387 medical students using Qualtrics at a single urban medical school in a majority-minority state between March and May 2023. This study is a cross-sectional observational design.

Sample

The sample consists of four cohorts of medical students, years one through 4. However, some students may be repeat students within their cohorts.

Data Collection

We constructed a 30-item survey of the Clance Imposterism Scale^{7,8}, along with select demographic characteristics. We administered the survey electronically using Qualtrics. Outcomes of interest include participant scores on the Imposter Phenomenon Scale and any relationship to individual demographic questions. For the imposterism questions, we combined few/moderate and frequent/intense responses. Slightly more than half of the participants were Underrepresented in Medicine (URiM). The Clance Imposterism Scale defines feelings of frequent or intense as having a score of 61-80.⁹

Indicators

We selected demographic questions to determine if there were influencers that affect feelings of impostorism. Selected background questions included medical school year, gender, environment where raised, first-generation college student, Combined Baccalaureate/Medical Degree (BA/MD) student, attendance at a community college before entering medical school, English as a second language, socio-economic status, and race/ethnicity.

We selected the medical school year to determine when feelings of imposterism occur.

The environment where raised centered on rural, suburban, or urban environments. We allowed students to select the environment without giving a definition.

We asked about first-generation status, as not having parental role models to guide a new environment may affect feelings of belonging.

We asked about BA/MD status as this may ameliorate feelings of imposterism due to early exposure to the identity and profession of medicine. These students are selected during their final year of high school and are guaranteed admittance to our medical school upon successful undergraduate studies and a passing MCAT score. These students receive support, guidance, mentorship, and specialized healthcare courses prior to matriculation.

We asked about attendance at a community college before matriculation, as there is a negative association between attending community colleges and ultimate acceptance into medical school.¹⁰

English as a second language was selected as this may be a barrier to comprehension of medical education.

Socio-economic status was determined by having respondents indicate the highest level of education of their mothers and fathers. We combined responses from high school and vocational training, then collapsed responses into less than high school versus all other education levels. We deleted the two “unknown” responses.

We combined race/ethnicity responses into non-Hispanic white and underrepresented in Medicine (i.e., Hispanic, African American, American Indian/Alaska Native).

We believe we are the first to explore imposterism between medical student cohorts and correlate it with background demographics and characteristics, as most studies investigated imposterism at a specific point in time during training. A medical librarian at our institution searched PubMed, APA PsycInfo, and Embase using MeSH terms of :("imposter phenomenon"[Title/Abstract] OR "imposter syndrome"[Title/Abstract] OR "imposter syndrome"[Supplementary Concept] OR "clance imposter phenomenon scale"[Title/Abstract] OR "impostor syndrome"[Title/Abstract] OR "impostor phenomenon"[Title/Abstract] OR "impostorism"[Title/Abstract] OR "imposterism"[Title/Abstract]) AND ("students, medical"[MeSH Terms] OR "medical students"[Title/Abstract]). We reviewed the titles and abstracts for similar studies. No results were returned.

Data Analysis

We used Pearson’s Chi-Square and Fisher Exact tests and a two-tailed Type I error of less than 5% to assess statistical significance.

Ethics

The University of New Mexico Human Research and Review Committee exempted this study (HRRC # 22–035).

RESULTS

Out of 387 students, we received 89 responses for a response rate of 23%. See Table 1 for a breakdown of responses from each medical school class.

Table 1
University of New Mexico School of Medicine Medical
School Class Response Rate

Medical Student Cohorts	Total in class	N	%
Year 1	85	35	41%
Year 2	100	16	16%
Year 3	99	18	18%
Year 4	103	20	19%
Total	387	89	23%

Insert Table 1 Here

Demographics:

See Table 2 for demographics. The Clance Imposterism Scale was used to determine the severity of imposter syndrome among the various medical student cohorts. Although it was not significant (p-value

0.6), 4th-year medical students reported more feelings of imposterism at the frequent or intense level (N, 13 65%) compared to the first three years. Females had feelings at the frequent/intense level of imposterism more than males or non-conforming individuals (N 38, 67%), which was significant (p-value .04)

Community and Education:

Across all four cohorts, we compared the community in which they were raised to their imposterism score to see if community size influenced feelings. Although there was no significant value for individuals raised in rural areas, 70% of them (N, 23) experienced frequent to intense imposterism compared to those raised in a suburban or urban environment.

We also looked at the individual's educational background. First-generation college students, BA/MD students, and community-based college students all experienced frequent/intense levels of imposterism compared to students without these characteristics. Non-Hispanic white respondents had a slightly higher level of imposterism (N 22, 59%) than non-white students (N 29, 56%). Additionally, more than three-fourths of respondents experienced imposter syndrome at the frequent or severe level if their father or mother had less than 11 years of high school (mothers: 83%, fathers 83%) (N, 13).

Insert Table 2 Here

Table 2: University of New Mexico School of Medicine Demographics

Characteristic	Few/Moderate, N = 38 ¹	Frequent/Intense, N = 51 ¹	p-value ²
Medical School Year			0.6
MS1	15 (43%)	20 (57%)	
MS2	6 (38%)	10 (63%)	
MS3	10 (56%)	8 (44%)	
MS4	7 (35%)	13 (65%)	
Gender			0.040
Female	19 (33%)	38 (67%)	
Gender variant/non-conforming	2 (67%)	1 (33%)	
Male	17 (59%)	12 (41%)	
Environment Where Raised			0.2
Rural	10 (30%)	23 (70%)	
Suburban	17 (49%)	18 (51%)	
Urban	11 (52%)	10 (48%)	
First Generation College Student	10 (33%)	20 (67%)	0.2
BA/MD	7 (37%)	12 (63%)	0.6
Community College	5 (31%)	11 (69%)	0.3
English as a Second Language	28 (43%)	37 (57%)	>0.9
Mother's Education			0.7
Doctoral degree	6 (55%)	5 (45%)	
Master's degree	8 (38%)	13 (62%)	
Bachelor's degree	12 (50%)	12 (50%)	
Vocational/High School	9 (41%)	13 (59%)	
Less than high school - year 11 or below	3 (27%)	8 (73%)	
Father's Education			0.7
Doctoral degree	9 (53%)	8 (47%)	
Master's degree	7 (44%)	9 (56%)	
Bachelor's degree	9 (47%)	10 (53%)	
Vocational/High School	12 (41%)	17 (59%)	
Less than high school - year 11 or below	1 (17%)	5 (83%)	
Non-Hispanic White	15 (41%)	22 (59%)	0.7
Non-White	23 (44%)	29 (56%)	0.7

¹ n (%)

² Pearson's Chi-squared test; Fisher's exact test

DISCUSSION

Medical students struggle to find their identity as healthcare students (change in self), members of a professional team responsible for patient care (change in identity), and, ultimately, as medical doctors (change in self and identity). Our findings demonstrate this is a dynamic process informed by individual background but also the environment and stage of their medical school journey. Our results are consistent with other studies that found females, URIM, and first-generation status are associated with feelings of imposterism.^{2,11-15} Similarly, 4th-year students experienced more severity of imposter

syndrome.¹⁶ However, other than gender, we could not find studies that explored imposterism in first-generation medical students, BA/MD students, attended a community college, or those from low socioeconomic backgrounds. The rate of frequent/intense imposterism in BA/MD students was surprising as we hypothesized they would respond at the low/moderate level given the mentorship and targeted support. This may be reflective of the medical school environment that expects a high level of achievement. Yet, these students most often come from rural and underrepresented backgrounds and thus are consistent with traditional medical student rates.

On a broad spectrum, social support, validation of success, positive affirmation, and personal/shared reflections were elements found to protect against imposterism.² Integrating personal ideals with professional values promotes healthy professional identity formation and can reduce imposterism.¹⁷ Normalizing imposterism and encouraging conversations about insecurity and self-doubt increases the likelihood that interns and potentially students will reach out for help.¹⁸ One creative method for exploring individual feelings used an artistic method of mask-making.^{1,19} Recently, a guide for addressing imposterism was published, providing excellent guidance for general supporting medical students.²⁰ However, if we accept that imposter syndrome exists among medical students, we need to understand when imposterism may peak during training, as well as the social determinants and personal history that can lead to the overall imposter syndromes as during medical school, student wellness and professional identity, decreased while feelings of imposterism may increase.²¹

Ameliorating imposterism in females who experience this phenomenon at a higher rate than males and amongst underrepresented minorities, longitudinal mentoring may be a solution. Given the change between the 4th year and the previous three, medical students experiencing the rigorous process of residency applications may experience self-doubt about their career choices and may need validation that they are prepared to transition to a more independent role. This can be done with honest communication about the student's strengths and support where deficits are noted. Fourth-year "boot camps" for a specialty, feedback from patients and team members, and clinicians and students self-assessing their readiness may be strategies. Patients expect and deserve clinicians who are confident in their diagnostic abilities. While imposterism is at the extreme end of self-doubt, physicians providing treatment and recommendations need to feel confident in their abilities. But this is not always the case.²²⁻²⁴ The results can potentially range from overordering tests to burnout, depression, and substance use.^{2,25} Future directions need to pilot strategies that work for students from various non-traditional backgrounds and at critical transitions, such as the final year of study.

Limitations

Limitations of this study include a low response rate. However, a representation of almost one-quarter of the student body provides valuable information.

CONCLUSION

We characterized medical students by cohort to identify points of intervention. Our findings highlight the importance of addressing the imposter phenomenon, especially in environments like medical school, where the expectations to excel may be intense. Recognizing that certain groups, such as females, URiM, and first-generation college students, may be more susceptible to these feelings is an important step toward providing support and resources tailored to their needs. Educating faculty, staff, and students about the imposter phenomenon, its prevalence, and its impact on well-being and academic performance may help reduce stigma and encourage open conversations. Creating an inclusive and supportive environment, such as counseling, mentoring programs, and peer support groups, can provide a safe space for students to share their experiences and receive guidance, can help mitigate strong feelings of imposterism, and promote student well-being and success. Medical schools can implement a variety of holistic strategies to create a nurturing and supporting climate and culture that empowers students to overcome feelings of imposterism, develop a healthy professional identity, and thrive personally and academically.

Declarations

Ethics: The University of New Mexico Human Research and Review Committee exempted this study (HRRC # 22-035). This study was conducted in accordance with the guidelines in the Helsinki Declaration of 2013. Informed consent was obtained prior to participants completing the survey. The procedure for informed verbal consent was approved by the University of New Mexico Human Research and Review Committee.

Consent for publication: Not applicable

Availability of data and materials: The datasets used and/or analyzed during the current study are available from the corresponding author upon reasonable request.

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Authors' contributions: All authors read and approved the final manuscript.

C.C. conducted the literature review, created and administered the survey, wrote the abstract and results, and was a major contributor to writing the manuscript. A.C.E contributed to the literature review, wrote the introduction, methodology, and discussion, and was a major contributor to writing the manuscript. Cam C. analyzed the results. M.B. wrote the conclusion and was a major contributor to writing the manuscript, and provided a secondary review of the paper.

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References

1. Stephens M. Taking Off the Mask: Impostorism and Medical Education. PRiMER; 6. Epub ahead of print 2022. 10.22454/PRiMER.2022.527933.
2. Gottlieb M, Chung A, Battaglioli N, et al. Impostor syndrome among physicians and physicians in training: A scoping review. *Med Educ.* 2020;54:116–24.
3. Monrouxe LV, Rees CE. The socialisation of mistreatment in the healthcare workplace: Moving beyond narrative content to analyse educator data as discourse. *Med Educ.* 2023;57:882–5.
4. Nicholson N. A theory of work role transitions. *Adm Sci Q.* 1984;29:172–91.
5. Marcia JE. Development and validation of ego-identity status. *J Pers Soc Psychol.* 1966;3:551–8.
6. Goldie J. The formation of professional identity in medical students: considerations for educators. *Med Teach.* 2012;34:e641–648.
7. Clance PR, OToole MA. The Imposter Phenomenon: An Internal Barrier to Empowerment and Achievement. *Women Ther.* 1987;6:51–64.
8. Pauline Rose Clance. *The Impostor Phenomenon: Overcoming the Fear That Haunts Your Success.* Toronto: BantamBooks; 1986.
9. : Pauline Rose Clance. *The Impostor phenomenon: When success makes you feel like a fake.* Toronto, Bantam. <https://www.paulineroseclance.com/pdf/IPscoringtest.pdf> (1985).
10. Saguil A, Kellermann AL. The Community College Pathway to Medical School: A Road Less Traveled. *Acad Med.* 2014;89:1589.
11. Rice J, Rosario-Williams B, Williams F, et al. Impostor syndrome among minority medical students who are underrepresented in medicine. *J Natl Med Assoc.* 2023;115:191–8.
12. Martinez JA, Sher KJ, Krull JL, et al. Blue-Collar Scholars? Mediators and Moderators of University Attrition in First-Generation College Students. *J Coll Stud Dev.* 2009;50:87–103.
13. Pulliam N, Gonzalez CE. Success or Fraud? Exploring the Impacts of the Impostor Phenomenon Among High Achieving Racial/Ethnic Minority and First-Generation College Students.
14. Peteet BJ, Montgomery L, Weekes JC. Predictors of impostor phenomenon among talented ethnic minority undergraduate students. *J Negro Educ.* 2015;84:175–86.
15. Holliday AM, Gheihman G, Cooper C, et al. High Prevalence of Imposterism Among Female Harvard Medical and Dental Students. *J Gen Intern Med.* 2020;35:2499–501.
16. Villwock JA, Sobin LB, Koester LA, et al. Impostor syndrome and burnout among American medical students: a pilot study. *Int J Med Educ.* 2016;7:364–9.
17. Hatem DS, Halpin T. Becoming Doctors: Examining Student Narratives to Understand the Process of Professional Identity Formation Within a Learning Community. *J Med Educ Curric Dev.* 2019;6:2382120519834546.
18. Ramsey JL, Spencer AL. Interns and imposter syndrome: proactively addressing resilience. *Med Educ.* 2019;53:504–5.

19. Stephens MB. Behind the Mask: Identity Formation and Team Building. *Ann Fam Med*. 2019;17:561–1.
20. Rehsi AS, McCarthy KE. Twelve tips for recognizing and supporting medical learners experiencing impostorism. *Med Teach*. 2023;0:1–6.
21. Houseknecht VE, Roman B, Stolfi A, et al. A Longitudinal Assessment of Professional Identity, Wellness, Imposter Phenomenon, and Calling to Medicine Among Medical Students. *Med Sci Educ*. 2019;29:493–7.
22. LaDonna KA, Ginsburg S, Watling C. Rising to the Level of Your Incompetence: What Physicians' Self-Assessment of Their Performance Reveals About the Imposter Syndrome in Medicine. *Acad Med*. 2018;93:763–8.
23. Jeanmonod R. Imposter syndrome? Check your biases. *Acad Emerg Med*; n/a. 10.1111/acem.14473.
24. Brennan-Wydra E, Chung HW, Angoff N, et al. Maladaptive Perfectionism, Impostor Phenomenon, and Suicidal Ideation Among Medical Students. *Acad Psychiatry J Am Assoc Dir Psychiatr Resid Train Assoc Acad Psychiatry*. 2021;45:708–15.
25. Lusk P, Ark T, Crowe R, et al. Measuring the development of a medical professional identity through medical school. *Med Teach*. 2023;0:1–7.