

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 duties, roles and challenges represents a significant change in responsibility. Medical students may experience the imposter phenomenon, fearing exposure as a “fraud”. Identifying when imposterism could peak during training, the student’s historical social determinants and personal history that can lead to the overall imposter syndrome is very important, because 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 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, resulting in a 23% response

rate. Fourth-year medical students reported experiencing feelings of imposterism more frequently or intensely than students in the first three years. Females had frequent/intense levels of imposterism more than males or non-conforming individuals. More than 75% of individuals raised in rural areas experienced frequent to intense imposterism compared to those raised in suburban or urban environments. 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 are intense. Recognizing that certain groups, such as females, underrepresented minorities, and first-generation college students, may be more susceptible to these feelings of inadequacy is an important step toward providing support and resources tailored to meet their needs.

Keywords: Imposter Phenomenon; Medical Student; Medical; Wellness; Burnout

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BACKGROUND

The imposter phenomenon (IP), also referred to as imposter syndrome, is a “relatively well-recognized

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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 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. Literature supports acknowledging and addressing IP to combat burnout and improve physicians’ well-being.² The impact of IP on medical students is a compelling concern, affecting their well-being and educational experiences. High levels of IP are present in medical students even before they begin their studies, tend to increase over the first year, and are associated with emotional distress, including feelings of alienation, lower self-esteem, and reduced self-compassion.³

Transitioning within medical school to new duties, tasks, teams 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.*”⁴ 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 transition from student to near-physician is likely highly variable and deeply personal. Some individuals may struggle with multiple personal, social, physical, and emotional issues, while others may appear to be “unscathed”. Recognizing and addressing IP is essential for supporting medical students’ development and well-being, as it can influence their self-perception and professional growth.⁵

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).⁶ Social identity theory suggests that “*varying degrees of exploration and commitment contribute to identity formation, particularly during times of uncertainty and transition.*”⁷ 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.*”⁸ 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 used Qualtrics to distribute the survey to 387 medical students at a single urban medical school in a majority-minority state between March and May 2023. This study has a cross-sectional observational design.

Sample

The sample consists of four cohorts of medical students from years one through four. However, some students may be repeating within their respective cohorts.

Data Collection

We constructed a 30-item survey of the Clance Imposterism Scale,^{9,10} 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. 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 61-80.¹¹

Indicators

We selected demographic questions to determine if there were influences that affect feelings of imposterism. Selected background questions included: medical school year, gender, upbringing environment, first-generation college student status, Combined Baccalaureate/Medical Degree (BA/MD) student, community college attendance before medical school, English as a second language, socio-economic status, and race/ethnicity. (See Appendix A for the full survey)

We selected gender to characterize our study population because females often experience imposterism more than other genders.¹²

We selected ethnicity to characterize our study population and because those underrepresented in medicine (i.e, non-Hispanic Whites) experience imposterism at a higher level.¹³⁻¹⁵

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

The upbringing environment focused on rural, suburban, or urban settings. We allowed students to select the environment without giving a definition.

We inquired about first-generation status, as the absence of parental role models to guide them in a new environment may impact 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 before matriculation.

We asked about community college attendance prior to medical school, as there is a negative association between attending community colleges and ultimate acceptance into medical school.¹⁶

We included English as a second language, as this may pose a barrier to comprehending medical education.

Socio-economic status was determined by asking respondents to indicate the highest level of education attained by 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 two “unknown” responses.

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

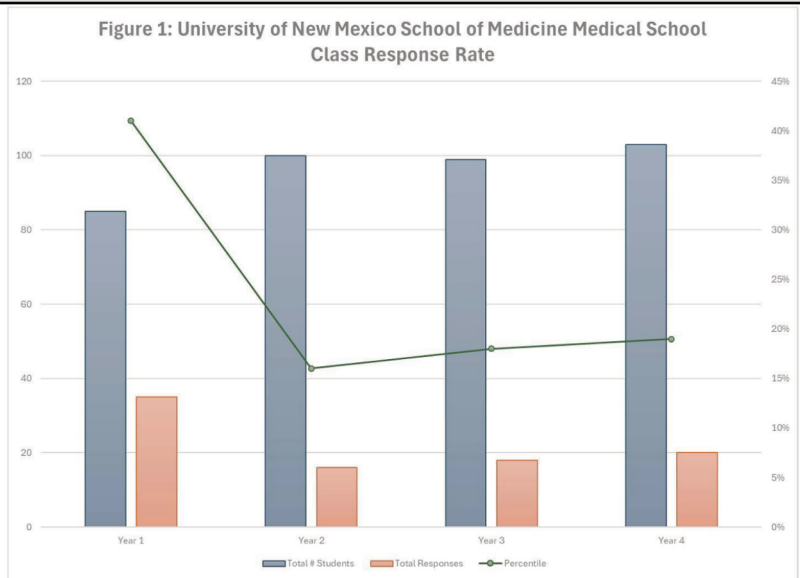
We believe we are the first to explore imposterism between medical student cohorts and correlate it with background demographics and characteristics, as most studies investigated imposterism at a specific point in time during training. A medical librarian at our institution searched PubMed, APA PsycInfo, 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 "imposterism"[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

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

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

Figure 1: University of New Mexico School of Medicine School Class Response Rate



RESULTS:

We received 89 responses out of 387 students, resulting in a 23% response rate. See Figure 1 for a breakdown of responses from each medical school class and the number of responses per class.

Demographics:

See Table 1 for demographics. The Clance Imposterism Scale was used to determine the severity of imposter syndrome among the various medical student cohorts. Although not statistically significant (p-value 0.6), fourth-year medical students reported more frequent or intense feelings of imposterism (N= 13, 65%) than students in 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 0.04)

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.

Table 1: 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 of upbringing			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
n (%)			
Pearson's Chi-squared test; Fisher's exact test			

Abbreviations: BA/MD, Combined Baccalaureate/Medical Degree Program

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 75% 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).

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 backgrounds and 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.^{12-15,17,18} Similarly, fourth-year students experienced more severity of imposter syndrome.¹⁹ However, other than gender, we could not find studies that explored imposterism in first-generation medical students, BA/MD students, community college attendance prior to medical school, or those from low socioeconomic backgrounds. The rate of frequent/intense imposterism in BA/MD students was surprising as we predicted 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.¹³ Integrating personal ideals with professional values promotes healthy professional identity formation and can reduce imposterism.²⁰ Normalizing imposterism and encouraging conversations about insecurity and self-doubt increases the likelihood that students will reach out for help.²¹ One creative method for exploring individual feelings was the artistic method of mask-

making.^{1,22} Recently, a guide for addressing imposterism was published, offering excellent guidance for supporting medical students.²³ 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 historical social determinants and personal history that contribute to it. During medical school, student wellness and professional identity may decrease while feelings of imposterism increase.²⁴

To address imposterism, particularly among females who experience it at higher rates than males and among underrepresented minorities, longitudinal mentoring may be an effective solution. Given the change between the fourth 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 much 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 all be good strategies. Patients expect and deserve clinicians who are confident in their diagnostic abilities. While imposterism represents an extreme form of self-doubt, physicians providing treatment and recommendations must be confident in their abilities. However, this is not always the case.²⁵⁻²⁷ The results can potentially range from overordering tests to burnout, depression, and substance use.^{17,28} Future efforts should focus on piloting effective strategies for students from diverse non-traditional backgrounds and during critical transitions, such as the final year of study.

Limitations: Limitations to this study include the low response rate. Nevertheless, representing nearly 25% of the student body provides valuable insights. We combined the Clance Imposterism Scale findings into two categories (few/moderate and frequent/intense), whereas the scale's author differentiates among four distinct imposterism experiences. While combining categories may increase the sample size for analysis, it could also affect the final findings by potentially inflating the few-to-moderate and frequent-to-intense categories. However, upon reviewing the individual responses, we believe the impact is minimal, as those who responded "few" or "intense" were not substantial.

Another limitation is the variation in imposter syndrome, which we acknowledge as crucial for contextualizing feelings of insecurity or inadequacy. For example, feelings may stem from a lack of academic success in medical school, an inability to transition to an adult-learner mindset, or a minimal tolerance for ambiguity when assessment may be given as pass/fail rather than a traditional letter grade.

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. Addressing IP early through supportive feedback, mentoring, and collaborative learning can help mitigate these effects. Educational interventions, such as workshops, group therapy, and individual counseling, are all effective strategies.²⁹ 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, help mitigate strong feelings of imposterism, and promote student well-being and success. Medical schools can implement various 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.

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Appendix A: SURVEY INSTRUMENT

SURVEY QUESTIONS

Demographic Questions

What year of medical school are you in?

Gender: Female, male, transgender female, transgender male, gender variant/non-conforming, not-listed (open ended question), prefer not to answer

Ethnicity: White, Black/African American, American Indian/Alaska Native, Asian, Native Hawaiian or Other Pacific Islander

Parental education (less than high school – year 11 or below; high school graduate, vocational qualification, bachelor’s degree, master’s degree, doctorate degree, unknown)

Were you primarily raised in a rural, suburban, or urban location?

Were you a BA/MD student?

Are you a first-generation college student? Yes or No

Did you attend a community college prior to a University? Yes or No
If yes, how many courses? _____

Is English your first language? Yes or No

Clance IP Scale (1-5 Likert Scale)

1 = Not at all true 2 = Rarely 3 = Sometimes 4 = Often 5 = Very true

For each question, please circle the number that best indicates how true the statement is of you. It is best to give the first response that enters your mind rather than dwelling on each statement and thinking about it over and over.

1. 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.
2. I can give the impression that I’m more competent than I really am.
3. I avoid evaluations if possible and have a dread of others evaluating me.

4. 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.
5. 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.
6. I'm afraid people important to me may find out that I'm not as capable as they think I am.
7. I tend to remember the incidents in which I have not done my best more than those times I have done my best.
8. I rarely do a project or task as well as I'd like to do it.
9. Sometimes I feel or believe that my success in my life or in my job has been the result of some kind of error.
10. It's hard for me to accept compliments or praise about my intelligence or accomplishments.
11. At times, I feel my success has been due to some kind of luck.
12. I'm disappointed at times in my present accomplishments and think I should have accomplished much more.
13. Sometimes I'm afraid others will discover how much knowledge or ability I really lack.
14. I'm often afraid that I may fail at a new assignment or undertaking even though I generally do well at what I attempt.
15. When I've succeeded at something and received recognition for my accomplishments, I have doubts that I can keep repeating that success.
16. 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.
17. I often compare my ability to those around me and think they may be more intelligent than I am.
18. I often worry about not succeeding with a project or examination, even though others around me have considerable confidence that I will do well.
19. 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.
20. I feel bad and discouraged if I'm not "the best" or at least "very special" in situations that involve achievement.