

Prevalence of imposter phenomenon and its correlates among undergraduate medical students of a government medical college, West Bengal, India



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ABSTRACT

Background: The prevalence of imposter phenomenon (IP) is more among students, engineers, health-care-professionals, and researchers. Medical students are particularly predisposed to IP due to stressors like a highly competitive environment both preceding and during medical education. **Aims and Objectives:** The aims and objectives of the study are to find out the prevalence of IP among undergraduate medical students of a Medical College of Eastern India and to elicit the relationship between background factors and IP. **Materials and Methods:** One hundred and thirty medical students were selected by stratified random sampling from all four semesters. Twenty point Clance IP scale was used to measure IP. It contains 20 questions, each of them having five options. A score between "60 and 80" indicates frequent imposter syndrome and a score higher than 80 indicates intense imposter feeling. After conducting descriptive analysis, ordinal logistic regression was conducted. **Results:** Among the study subjects 37.7% had frequent imposter feelings and 10.8% had intense imposter feelings. High level of IP (frequent and intense combined) is more common among second-semester students, females, middle class, those who sleep >56 h/week, who perceived their school performance was good, who have a family history of psychiatric illness, and who take some kind of chronic medication. As per Ordinal regression, second-semester, middle class, good school performance, and history of chronic medication were found to be significant predictors of higher degree IP. **Conclusion:** The prevalence of IP is alarming among medical students and it is high time to address this before it turns into graver psychiatric morbidity.

Key words: Imposter syndrome; Perfectionism; Medical education; Indian medical graduate; Clance IP scale

INTRODUCTION

Imposter phenomenon (IP) (also known as imposter syndrome, fraud syndrome, or perceived fraudulence) is a psychological phenomenon when capable people continuously doubt their accomplishments with the persistent fear of getting exposed. They always feel like they have fooled others into believing in them, even when their

abilities are proven to be adequate.¹ The word imposter is commonly used to describe someone who impersonates a different being and tries to hide among a group of people to which they do not belong. This constant suspicion may turn into a personal challenge hampering their daily activities in an academic or professional setting.² Almost always, the fraction of people who suffer from this problem are genuinely deserving persons, but this continuous lack of

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confidence in themselves prevents them from grabbing new opportunities thus diminishing their potential success. Though this phenomenon is largely considered a psychological manifestation, newer studies have thrown some light on the neurological basis of imposter syndrome.^{3,4}

IP can be observed in people of many fields, but its prevalence is more in students, academicians, and people in occupations requiring special skills such as engineers, healthcare professionals, and researchers. Medical students are particularly predisposed, as medical curriculums are perceived to be much more stressful and demanding in comparison to many other courses.⁵ The particular stressors are various, ranging from a highly competitive environment both preceding and during medical education, to unhealthy dietary and sleeping habits.⁶

A previous literature review revealed the overall prevalence of the impostor phenomenon among medical students and residents ranged from 22.5% to 46.6%.² IP is a risk factor for burnout and psychological distress⁷ and it is thus essential to familiarize the individual with the phenomenon and provide support to those suffering from it, before it takes its toll in a more permanent way, as the association between IP and suicidal ideations has also been documented.⁸ In India, there is lack of awareness regarding psychological problems, especially among students. Although students and professionals in the medical field suffer from a significant burden of stress and burnout on a regular basis,⁷ no adequate infrastructure is made to provide a helping hand to them. Moreover, due to the current environment of competitive examinations in the medical curriculum, the stress factor has increased significantly.⁹ Although there are numerous studies done on medical students in other countries, very few studies are present on Indian undergraduate medical students.^{10,11}

Aims and objectives

The study aims at finding out prevalence of imposter phenomenon (IP) among the undergraduate medical students of a tertiary medical college of Eastern India. The secondary objective of the study is to elicit the relationship between background factors like socio demographic characteristics, past academic performances etc and IP.

MATERIALS AND METHODS

This cross-sectional study was conducted in a tertiary care hospital of Kolkata among undergraduate medical students, who have appeared for at least one-semester examination using a pre-designed, pre-tested, and semi-structured questionnaire. Assuming the prevalence of IP as 91%,¹⁰ the minimum desired sample size was calculated as 126 and it

was increased by 10–140 to counter incomplete responses. Using the stratified random sampling method, 35 responses from each semester were selected randomly by generating a random number in MS Excel. Total five responses were found incomplete, so data from 130 subjects were analyzed.

The questionnaire contained a total of 36 questions. The first 16 questions were for background data such as gender, age, family history of psychiatric illness, sleep hours, physical activities, and percentage of marks in the last semester. The rest 20 questions were directed at finding out the degree of IP according to the Clance IP Scale.¹²

Clance IP Scale contains 20 questions each of them having five options with designated scores ranging from one to five, respectively. The options with their designated scores are one for not at all true, two for rarely, three for sometimes, four for often, and five for very true. The minimum obtainable score can be 20, while the maximum score can be 100. A score <40 indicates that a person is not suffering from imposter syndrome. A score from 40 to 60 indicates moderate imposter feeling, score between 60 and 80 indicates frequent imposter feeling and a score higher than 80 indicates intense imposter feeling.

The data were analyzed in MS Excel. Descriptive results were presented as numbers and percentages. Relationship between IP and other factors was elicited by ordinal logistic regression. The significance level was set at $P < 0.05$ level. Ethics clearance was taken from the Institutional Ethics Committee of the concerned Medical College (Memo No: NRSMC/IEC/284/2023).

RESULTS

Among 130 study subjects, 57.69% were male and 42.31% were female. The majority of students were 21–23 years of age (55.38%), resided permanently in urban areas (75.38%), and belonged to the upper class (59.2%) as per the modified B.G Prasad scale.¹³ About 50% of study subjects were staying in college hostels and it is found that most of the students (73.07%) slept for 42–56 h in 7 days on average. Around 37% of students spent 1–2 h on their leisure activities daily. Alarming 46.92% of students did not engage in any form of physical activity.

About 73.85% of the students of this Medical College thought that they had good school performance. Regarding marks obtained in last semester's examination, it is seen that 65.38% of students scored between 50 and 70% marks. It is found that 10.77% of students received some form of long-term medication. Most of the students did not have any family history of psychiatric illness (approx 91%).

Around 45.3% of students had a moderate level of imposter feelings followed by frequent imposter feelings (37.7%). About 10.8% of students had intense imposter feelings. It is alarming that 93.8% of students had some amount of imposter feeling as per Clance IP scale.

Intense imposter feeling is similar in the 2nd, 4th, and 7th semesters (12.9%, 11.43% and 12.5%, respectively) which comes down to 6.25% in the 9th semester. Frequent imposter feeling is highest among second-semester students (51.61%), followed by 9th semester students (40.63%). Hence, it can be concluded that high imposter feeling (frequent and intense combined) was maximum among second-semester students which gradually came down through 4th and 7th semesters when it is lowest. It again increased in 9th semester but remained lower than the 2nd semester students.

About 61.81% of female students had high levels of imposter feelings (frequent and intense combined) which is 1.6 times higher (confidence interval [CI] = 1.31–5.55) than the male students (38.67%). Among 59 students who had moderate imposter feelings, 44 students belonged to the urban area (which is 45.36% of the urban population) and 15 students belonged to the rural area (which is 45.45% of the rural population). Similar percentage of hostelites (48.33%), and day scholars (42.86%), suffer from moderate imposter feelings.

According to the modified BG Prasad scale students were distributed into five socioeconomic classes from upper to lower. High level of imposter feeling is least among the lower socioeconomic class (25% only). Whereas in the other three groups, it ranged from 40% to 50%, it is staggeringly high among middle-class students (approximately 86%) (Table 1).

High level of imposter feeling is maximum among those students who sleep more than 56 h/week (61.11%). Irrespective of hours of leisure activity, high imposter feeling ranged from 45% to 55%. High imposter feeling is least among those students who perform physical exercises 4–6 times a week (26.32%). About 53.13% of students, who perceived that their school performance was good, were suffering from high imposter feeling. It is 2.07 times higher than those students who perceived that their school performance was average (35.29%). About 50% students who scored <50% in the last semester examination were having high level of imposter feeling. It is similar among those who scored 50–75% in last examination (49.41%) but lower among those who scored more than 75% marks (20% only). Approximately 79% of students who had a family history of psychiatric illness were having high imposter feelings. Approximately 64% of students who consume

some kind of long-term medication also suffer from the high degree of imposter feeling (Table 1).

An ordinal regression model was constructed using no imposter feeling as the baseline output variable. Compared to the baseline output, moderate and frequent and intense imposter feelings had overall adjusted O.R (aOR) of 5.96, 8.42 and 1.89, respectively. The model explained 44.1% variability of imposter feeling (Nagelkerke's $r^2=0.441$). According to the model fit summary -2 Log-Likelihood ratio was 193.05 which is significant at $df=30$. A Test of parallel lines was also conducted where the -2 Log-Likelihood ratio was found to be 158.57 which is not significant at $df=60$ ($P=0.997$). Among all the predictor variables “middle-class students (as per modified B.G. Prasad scale)”, “good performance in school”, “family history of psychiatric illness”, “history of chronic medication”, and “students of the second semester” were found to be significantly increasing imposter feeling (Table 2).

DISCUSSION

The prevalence of imposter syndrome is calculated based on cutoff of Clance's impostor scale (CIPS) scale. Like many previous studies, we used the cut-off point of high IP at 60 and found high level of imposter feeling (>60) among 48.5% medical students. A similar study on medical students in Nigeria found that 22.5% of participants experienced high levels of IP.¹⁴ Three studies that used a cut-off score of 62 and provided an overall IP percentage found that prevalence ranged from 33% to 18.7% for medical students and residents.¹⁵⁻¹⁷ A study including medical interns in India found that 17.6% of participants experienced high (>60) or intense (>80) levels of IP.¹⁸ Our result is also significantly higher than a previous study done in north Bengal where high IP was found among 35% students only.¹¹

Furthermore, mean impostor scores ranged from 17.97 to 61.2 in medical students and interns. The present study showed almost identical results, where the mean CIP score is found to be 61.49. Among studies of different countries, students and residents of Nigeria were having the lowest mean score and residents in Canada were having the highest mean score.^{18,19}

The present study indicated that “2nd semester” is a significantly higher predictor of IP of greater degree (frequent and intense) compared to other semesters. The previous studies conducted by Legassie et al.,¹⁶ Leach et al.,²⁰ and Oriel et al.,¹⁷ found no statistically significant association between IP symptoms and year of training in medical residents. However, Villwock et al.,⁷ found that IP

Table 1: Different levels of IP and its predictor variables among undergraduate medical students (n=130)

Variables number (%)	No imposter feeling	Moderate level of IP	Low level of IP (No+moderate)	Frequent IP	Intense IP	High level of IP (frequent+intense)
Semester						
2 nd semester	1 (3.23)	10 (32.26)	11 (35.48)	16 (51.61)	4 (12.9)	20 (64.52)
4 th semester	2 (5.71)	18 (51.43)	20 (57.14)	11 (31.43)	4 (11.43)	15 (42.86)
7 th semester	2 (6.25)	17 (53.13)	19 (59.38)	9 (28.13)	4 (12.5)	13 (40.63)
9 th semester	3 (9.38)	14 (43.75)	17 (53.13)	13 (40.63)	2 (6.25)	15 (46.88)
Gender						
Male	6 (8)	40 (53.33)	46 (61.33)	22 (29.34)	7 (9.33)	29 (38.67)
Female	2 (3.63)	19 (34.54)	21 (38.18)	27 (49.09)	7 (12.72)	34 (61.82)
Permanent residence						
Rural	1 (3.03)	15 (45.45)	16 (48.48)	13 (39.39)	4 (12.12)	17 (51.52)
Urban	7 (7.22)	44 (45.36)	51 (52.58)	36 (37.11)	10 (10.31)	46 (47.42)
Current Residence						
Hostel	2 (3.33)	29 (48.33)	31 (51.67)	24 (40)	5 (8.33)	29 (48.33)
Home/PG	6 (8.57)	30 (42.86)	36 (51.43)	25 (35.71)	9 (12.86)	34 (48.57)
SES as per modified B.G. Prasad scale						
Upper	5 (6.49)	36 (46.75)	41 (53.25)	27 (35.06)	9 (11.69)	36 (46.75)
Upper middle	1 (5.88)	9 (52.94)	10 (58.82)	6 (35.29)	1 (5.88)	7 (41.18)
Middle	0 (0)	1 (14.29)	1 (14.29)	5 (71.43)	1 (14.29)	6 (85.71)
Lower Middle	0 (0)	3 (50)	3 (50)	2 (33.33)	1 (16.67)	3 (50)
Lower	0 (0)	3 (75)	3 (75)	1 (25)	0 (0)	1 (25)
Average hours of sleep per week						
< 42 h	0	8 (50)	8 (50)	7 (43.75)	1 (6.25)	8 (50)
42–56 h	8 (8.33)	44 (45.83)	52 (54.17)	33 (34.37)	11 (11.45)	44 (45.83)
> 56 h	0	7 (38.89)	7 (38.89)	9 (50)	2 (11.11)	11 (61.11)
Average hours of leisure per day						
Nil	0 (0)	4 (80)	4 (80)	0 (0)	1 (20)	1 (20)
<0.5 h	0 (0)	3 (50)	3 (50)	3 (50)	0 (0)	3 (50)
0.5–1 h	1 (3.7)	12 (44.44)	13 (48.15)	8 (29.63)	6 (22.22)	14 (51.85)
1–2 h	2 (4.17)	24 (50)	26 (54.17)	19 (39.58)	3 (6.25)	22 (45.83)
>2 h	5 (11.36)	16 (36.36)	21 (47.73)	19 (43.18)	4 (9.09)	23 (52.27)
Frequency of physical exercise						
No	4 (6.56)	24 (39.34)	28 (45.9)	24 (39.34)	9 (14.75)	33 (54.1)
Once a week	0 (0)	5 (41.67)	5 (41.67)	4 (33.33)	3 (25)	7 (58.33)
2–3 times a week	2 (10.53)	9 (47.37)	11 (57.89)	7 (36.84)	1 (5.26)	8 (42.11)
4–6 time a week	0 (0)	14 (73.68)	14 (73.68)	5 (26.32)	0 (0)	5 (26.32)
Daily	2 (10.53)	7 (36.84)	9 (47.37)	9 (47.37)	1 (5.26)	10 (52.63)
Perceived school performance						
Average	3 (8.82)	19 (55.88)	22 (64.71)	10 (29.41)	2 (5.88)	12 (35.29)
Good	5 (5.21)	40 (41.67)	45 (46.88)	39 (40.63)	12 (12.5)	51 (53.13)
Marks obtained in last semester examination						
<50%	3 (7.5)	17 (42.5)	20 (50)	14 (35.0)	6 (15.0)	20 (50)
50–75%	3 (3.53)	40 (47.06)	43 (50.59)	34 (40)	8 (9.41)	42 (49.41)
>75%	2 (40)	2 (40)	4 (80)	1 (20)	0 (0)	1 (20)
Family history of psychiatric illness						
Yes	0 (0)	3 (21.43)	3 (21.43)	9 (64.29)	2 (14.29)	11 (78.57)
No	8 (6.9)	56 (48.28)	64 (55.17)	40 (34.48)	12 (10.34)	52 (44.83)
History of chronic medication						
Yes	0 (0)	5 (35.71)	5 (35.71)	6 (42.85)	3 (21.44)	9 (64.29)
No	8 (6.91)	54 (46.55)	62 (53.45)	43 (37.06)	11 (9.48)	54 (46.55)

IP: Imposter phenomenon

levels is highest among 4th-year medical students ($P=0.015$). Both of these findings corroborate with the present study which suggests IP is highest in 1st year which gradually comes down through the years of study, except in the final year when IP symptoms increase again. In 1st year, students have to go through subjects which are vastly different and exhaustive compared to the subjects learnt during their high school period, which they might find difficult to cope

with. As the examination approaches at the end of second semester, these feelings of difficulty in coping accentuates due to uncertainty around the outcome of examination. That the IP again rises in the final year may be due to the fact that the students have to prepare for the final examination which would ultimately grant them the license to practice as a registered medical practitioner. Failure in this examination would mean failure to get that all important license for

Table 2: Ordinal logistic regression showing predictors of Imposter syndrome (n=130)

Predictor variables	aOR	P-value	95% CI	
			Lower bound of CI of aOR	Upper bound of CI of aOR
Socio economic class (as per B.G. Prasad scale)				
Upper Class	1.456	0.227	-0.904	3.815
Upper middle	0.803	0.526	-1.680	3.286
Middle	3.372	0.022	0.494	6.250
Upper lower	1.852	0.229	-1.168	4.873
Lower (reference)	0			
Perceived school performance				
Good*	1.162	0.021	0.177	2.147
Average (reference)	0			
Family history of psychiatric illness				
Present*	1.685	0.021	0.252	3.117
Absent (reference)	0			
Long term medication				
Present*	1.839	0.007	0.501	3.178
Absent (reference)	0			
Gender				
Female	0.764	0.131	-0.226	1.755
Male (reference)	0			
Permanent residence				
Rural	0.544	0.340	-0.573	1.662
Urban (reference)	0			
Current residence				
Home/PG	0.623	0.202	-0.335	1.582
Hostel (reference)	0			
Physical activity				
Once a week	-0.997	0.666	-5.528	3.534
2-3 times a week	0.305	0.761	-1.663	2.273
4-6 times a week	-1.157	0.238	-3.078	0.764
Daily	-0.371	0.705	-2.287	1.545
Nil (Reference)	0			
Semester				
2 nd Semester*	1.377	0.025	0.176	2.579
4 th Semester	0.945	0.129	-0.276	2.167
7 th Semester	0.603	0.319	-0.582	1.789
9 th Semester (reference)	0			
Average weekly hours of sleep				
42-56 h	-0.868	0.132	-1.998	0.262
<42 h	-0.386	0.629	-1.954	1.181
More than 56 h (reference)	0			
Average daily hours of leisure				
1-2 h	1.362	0.258	-0.998	3.721
½-1 h	2.057	0.096	-0.364	4.478
<½ h	0.734	0.610	-2.087	3.555
>2 h	0.817	0.485	-1.479	3.114
Nil (reference)	0			
Marks obtained in last semester				
50-75%	0.824	0.740	-4.051	5.699
<50%	1.484	0.555	-3.446	6.414
>75% (reference)	0			

*Significant result, CI: Confidence interval

which they have toiled hard. At the same time, they are anticipating about their ensuing internship during which they have to make somewhat independent decisions about patient care. At the same time, they also have to prepare for the forthcoming postgraduate entrance examination, which is a highly competitive and demanding one. A plethora of new challenges appears in the life of a final year student all of a sudden. Hence, it can be surmised that both the second

semester and final year students face quite novel challenges leading to increase in IP phenomenon, which is in line with the suggestion of Clance that imposter feelings are most pronounced when faced with newer challenges.^{16,21} This finding also indirectly corroborates with the relationship of age with IP found in previous studies. Increased age is found to be negatively correlated with IP, though this correlation is not always significant.^{17,22}

In our study, we found no significant correlation between age and IP. The probable reason behind that is the smaller age range among the study subjects. In Germany Brauer and Proyer found that age was significantly negatively correlated with impostor feelings among working professionals but not undergraduates.²³ Thus the similar scenario of not having a larger age range impacted their study too. With increase in age, as a student spends more time with peers, gets more familiar with the medical curriculum and can have a better understanding of what is demanded of a budding doctor, he can better adjust with the situation, and feels belongingness to the medical fraternity. This might be the reason that with increasing age, IP symptoms come down.

A previous meta-systematic review conducted by Bravata et al.,²⁴ showed that about 50% of studies worldwide reported significantly higher IP among females. The previous studies which analyzed CIPS among medical students and professionals according to gender, also reported that females suffer more from IP than males. Three of them^{16,17,22} found statistically significant differences. As per univariate analysis, our study also found that female students had 2.7 times higher IP (CI=1.31–5.55) than the male students which is statistically significant. A similar study conducted among the medical interns (who just passed final year MBBS) of western India¹⁸ found higher IP among female interns, but the association was not statistically significant. Interestingly when we fitted gender in the ordinal logistic regression model for multivariate analysis, it gave non-significant results. Hence, it may be concluded as, though it is well established that women suffer more from IP that association may be spurious and occurs due to some other sociocultural factors, which differs between males and females in our Indian scenario.

We have found that students of middle-class background (As per modified BG Prasad scale) suffer a significantly higher degree of IP than the other socio-economic groups. This finding differs from the study conducted in Goa, western India¹⁸ where they found higher socio-economic groups suffering more from IP which is not significant. The presence of a very less number of representatives from other socioeconomic groups in that study may be a reason behind this difference. In the Indian context, it is seen that middle-class people are in a perpetual dilemma between maintaining their grounded existence and trying to be more affluent by hook or crook. This inherent mentality may be the root cause of IP among the middle-class students, but that cannot be concluded with assertion from this cross-sectional study only.

Among the lifestyle factors, we did not find any significant predictor like the Goa study¹⁸ which reported “hours of

sleep” having a significant association with IP. We found more hours of sleep (>56 h/week) is associated with more IP scores but this association is not significant. Similarly, hours of leisure and hours of exercise had no significant association with IP symptoms.

Among the academic factors, no significant association was found between IP and the result of the previous semester examination, but those who scored more than 75% marks had lower IP scores. A highly significant predictor was found to be perceived school performance. Students who perceived that their school performance was good had a significantly greater chance of a high level of IP (P=0.027). No similar studies were found that explored this predictor. Probably a good school performance sets the bar higher for the students making them more prone to “perfectionism”. Attempting unrealistic goals is characteristic of both IP and self-oriented perfectionism.^{25,26} People who experience IP may have similar mental makeup as those seen in perfectionism, where the individual will engage in an all-or-nothing mentality and overgeneralize their own mistakes.²⁷ There were previous studies that explored the relationship between perfectionism and IP. Concern over mistakes, need for approval and rumination were found to be positively and significantly associated with CIPS scores.^{27,28} It has been seen that the students who get admission into medical colleges, usually used to be the rank holders of their respective high schools. As a result, they used to get significant attention and reverence back there, which acted as reward in the form of affiliation for them. After admission into medical college, when they are put into a pool of such “rank holders,” they perceive that the affiliation they enjoyed back in the high school is lacking here. It makes them uncomfortable and a sense of unbelongingness to the situation, leading to IP symptoms. As medical study is a highly competitive field in India and students often thrive for more competition to aim for perfection which in turn takes a toll and may lead to IP.

In the present study, other two significant predictors of the high degree of IP were the presence of chronic medication and a family history of psychiatric illness. The previous studies revealed that the presence of other forms of psychiatric morbidity increases the chance of IP.^{29,30} The present study suggests that even if no psychiatric illness is present per se, careful assessment of physical co-morbid conditions and family history of psychiatric illness should also be evaluated for effective assessment and management of Imposter syndrome.

Limitations of the study

The study adopted an online data collection tool without any scope of probing, which may result in contamination of information while filling up the questionnaire by the

students sitting together. A longitudinal study would have been better to find out causative role of different background factors on IP.

CONCLUSION

This can be concluded that the present study reflected that one-third of the students enduring frequent imposter feelings. Students of 2nd semester, female gender, middle socio-economic class, good school performer, family history of psychiatric illness, on long-term medication were bearing high IP. Hence, it is high time to address this uncomfortable, constant feeling of insecurity among those medical students, so that it can be sensibly managed before it turns into any psychiatric morbidity or graver outcome.

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MD- Design of the study, literature review, implementation of the study protocol, data collection, manuscript preparation, and editing; **SB-** Concept, design, data analysis, manuscript preparation, editing, and manuscript revision and submission; **DM-** Definition of intellectual content, data collection, and literature review; **RA-** Manuscript preparation, review manuscript, and data interpretation; **SM-** Review manuscript, literature survey, and preparation of manuscript

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