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Impostor Phenomenon among Egyptian University Students and its Relationship with Academic Performance and Burnout

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ABSTRACT

Background: Imposter phenomenon (IP), marked by persistent feelings of inadequacy despite demonstrated competence, is prevalent in competitive academic environments, affecting a substantial number of university students. Although not a clinical diagnosis, IP is associated with detrimental outcomes such as anxiety, self-doubt, and impaired academic performance.

Objectives: This study aimed to investigate the prevalence of the IP among Egyptian university students, explore the relationship between the IP, burnout, and academic performance and to determine the factors affecting the IP in Egyptian university students.

Subjects and methods: This cross-sectional analytical study was conducted among Egyptian university students from January 15 to February 15, 2025. A web-based questionnaire was distributed among students' forums and groups; it included demographic questions, Arabic-translated versions of the Clance Impostor Phenomenon Scale (CIPS) and Maslach Burnout Inventory-Student Survey (MBI-SS).

Results: There was a high prevalence of impostor feelings among 400 Egyptian university students with 116 (29%) experiencing moderate impostor feelings, 186 (46.5%) and 79 (19.8%) had frequent and intense impostor feelings respectively. 154 (38.5%) and 156 (39%) had emotional exhaustion and cynicism respectively and 137 (34.3%) had low academic efficacy. The results reported a significance association between IP and male sex, residence with colleagues, last academic years and healthcare students ($p = 0.02$), these factors were found to be positively affecting IP ($p < 0.05$). Burnout domains positively correlate to impostor feelings and burnout scores ($B = 0.27$, $p < 0.001$), while GPA found to have a negative correlate with IP ($B = -4.19$, $p < 0.045$) ($r = -0.1227$). **Conclusion:** Our study demonstrated the high prevalence of IP among Egyptian university students and the association of this phenomenon with emotional exhaustion, cynicism, lower academic efficacy, decrease in GPA and some sociodemographic factors emphasizing the need for interventions to promote students' wellbeing and limit the negative effects of IP.

Keywords: Impostor phenomenon, Burnout, Academic performance, Egyptian university students, Cross-sectional study.

INTRODUCTION

Impostor phenomenon is an intense and recurring feeling of being a fraud even with evidence of competence [1]. It is quite prevalent affecting almost 25 % of male and nearly 50% of female university students [2]. Those affected by impostor phenomenon cannot feel the internalized sense of success and fear the idea of being exposed as a fraud [3]. Most of the time they attribute it to external factors rather than their own capabilities. It can also be defined as "the subjective experience of perceived self-doubt in one's abilities and accomplishments compared to others, despite evidence to suggest the contrary" [1].

Even though impostor phenomenon is well-known among the general population, especially in competitive environments such as workplaces, universities, and academic institutions, and has also become established among the popular culture [4].

It's neither a recognized psychiatric disorder nor is it a mental illness, as it is not listed in major psychiatric publications such as the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), the International Classification of Disease (ICD-11), or the Chinese Classification of Mental Disorders (CCMD-3), but rather a cognitive distortion [4].

The environment plays a huge role in the spread of this phenomenon [5, 6]. University students get to deal with this problem on a daily basis due to the competitive and demanding nature of this academic setting [5, 6]. Its signs vary greatly from one person to another; one might struggle with anxiety, self-doubt, low self-esteem, and another can struggle with depression leading to more doubt and anxiety [5]. Many students find themselves trapped in this vicious cycle, leading to negative outcomes regarding their academic performance, career choices, and their character development [5]. In spite of the negative outcomes, some find themselves drawn to try harder; they perceive that feeling of self-doubt as fuel to their motivation [3, 5]. Notably, this phenomenon is more common among high achieving individuals, this further complicates the understanding of this phenomenon and its relation with academic performance [5, 6].

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Academic burnout as a whole, and in its individual components: Emotional exhaustion, cynicism, and academic efficacy has a high prevalence among undergraduate students affecting nearly 88% of medical students [7]. The university academic environment is particularly favorable to the development of burnout, along with impostor phenomenon. Both phenomena interact in a reciprocal manner due to the similarity of their epidemiology [6-8]. Several factors contribute to this such as overloaded curricula, high competitiveness, disproportionate expectations, and the daily confrontation with emotional and physical suffering further worsening this cycle [6, 7, 9]. Recent studies reveal that academic burnout, characterized by emotional exhaustion, cynicism, and academic efficacy, directly hinders students' achievements [7-9]. Impostor phenomenon can exacerbate this effect by eroding self-esteem fueling additional burnout; however, it has a limited direct effect on academic performance [2, 7]. Moreover, the combination of intense imposter feeling and burnout leads to higher possibility to fail the course compared to those experiencing burnout alone [2, 7].

In spite of the high prevalence of impostor phenomenon and burnout, there is a lack of research, especially in Egypt, addressing the simultaneous relationship between them and academic performance. Therefore, the aim of this study was to investigate the imposter phenomenon among the Egyptian university students and its relation to burnout and academic performance.

SUBJECTS AND METHODS

Study design, settings, and population: This cross-sectional analytical study was conducted among Egyptian university students. The study was conducted through the period from January 15 to February 15, 2025. The sample size was calculated using an Epi info soft online calculator with confidence level at 95%, margin of error at 5%, and we assumed the anticipated prevalence of the IP among medical student was 46.6% [13]. The minimum sample size estimated was 385 and increased to 400 subjects.

Inclusion criteria: All Egyptian university students were deemed eligible after providing informed consent.

Exclusion criteria: Students from non-Egyptian universities were excluded from the study.

Study tools: A Google form link was shared among the students in their forums and groups. The students were informed about the subject of the study, and that the participation is voluntary. The form consisted of a three-part questionnaire in Arabic after thorough literature review. Initially, the first part was structured to collect data about demographic characteristics and academic performance, including information regarding age, sex, academic year (first to fifth academic years), current university and faculty and family income. Subsequently, the second part was the Arabic translated CIPS. CIPS is a 20-item tool used for measuring the frequency and intensity of impostor phenomenon, each item was scored on a five-point Likert type, which is scored from 1 (not true at all) to 5 (very true). A total point of 40 or less indicates few, 41-60 indicates moderate, 61-80 indicates frequent, and higher than 80 indicates intense impostor experiences (CIPS, Clance, 1985) [3]. Lastly, the third part was the Arabic translated MBI-SS. MBI-SS is a 15-item tool used to assess severity and prevalence of burnout with its three dimensions: Emotional exhaustion (five items), cynicism (four items), and academic efficacy (six items). Each item is scored on a seven-point Likert type which is scored from 0 (never) to 6 (everyday) [8]. Individuals scoring ≥ 66th percentile for emotional exhaustion and cynicism, and below the 33rd percentile for academic efficacy, were considered to meet the cut-off values.

Questionnaire validity assessment: Both questionnaires were translated to Arabic by two Arabic translation experts. Each questionnaire was translated separately. Then, the Arabic version was translated back to English by a different language expert who is also an Arabic speaker. The back-translated version was then presented to the Arabic experts again and they verified that there was no discrepancy nor need for modifications. A pilot study was conducted with randomly chosen 32 students to assess the reliability and feasibility of the questionnaire. Students that participated in the pilot study were excluded from the main analysis. The Cronbach's alpha was to assess the reliability of the questionnaires. Regarding to translated MBI-SS, $\alpha = 0.75$ in the emotional exhaustion subscale, $\alpha = 0.76$ in the cynicism subscale, and $\alpha = 0.70$ in the academic effectiveness subscale. While, $\alpha = 0.87$ for Arabic translated CIPS. This indicates that the questionnaires have a high degree of reliability. The internal consistency of the questionnaire was verified by calculating the Pearson correlation coefficient between the scores of each question of the domain and the total score of the domain. All correlation coefficients between the score of each item and the total score of the dimension to which it belongs were significant at (P-value=0.01). Therefore, the two questionnaires' items are internally consistent with the domains to which they belong.

Ethical approval: This study was approved by Benha Faculty of Medicine's Ethics Committee. Following receipt of all information, signed consent was provided by each participant. Participation was anonymous and voluntary. The study adhered to the Helsinki Declaration throughout its execution.

Statistical analysis

All data were reviewed for completeness and consistency. Collected data was entered into the computer using Microsoft Office Excel. Then, the data were transferred and coded to the Statistical Package of Social Science software, 26th version (SPSS) to be statistically analysed. Data were presented using

descriptive statistics in the form of number and percentages for qualitative variables and mean ± SD for quantitative variables after exploring the data for normal distribution with the Kolmogorov-Smirnov test and visual inspections of the histograms. Independent t-test and ANOVA with LSD's method to adjust for the number of comparisons were used to compare differences between different groups of students concerning IP scores. The Pearson correlation coefficient was used to find the relationships between IP scores, burnout domains score and GPA. The multiple linear regression model was conducted to test the relationships between IP scores and various independent variables (Demographic characteristics, burnout score and GPA). P value ≤ 0.05 was considered statistically significant.

RESULTS

Table (1) presented the sociodemographic characteristics of 400 participants. The sample included 187 (46.75%) males and 213 (53.25%) females, with a mean age of 19.81 ± 1.332 years. The majority of participants resided in urban areas (76.3%) and 66.25% lived with their families. Most participants reported a moderate family income (85.3%), with 34% in their first academic year. The mean GPA was 3.242 ± 0.615, and the majority (85.5%) were medical students.

Table (1): Sociodemographic data of the participants (N=400)

Variable		Statistics
Sex	Male	187 (46.75%)
	Female	213 (53.25%)
Age	Mean ± SD	19.81±1.332
Place of residence	Urban	305 (76.3%)
	Rural	95 (23.8%)
Type of residence	Residence with family	265 (66.25%)
	Residence with colleagues	135 (33.75%)
Income of family	High	46 (11.5%)
	Moderate	341 (85.3%)
	low	13 (3.3%)
Academic year	First	136 (34%)
	Second	101 (25.3%)
	Third	118 (29.5%)
	Fourth	24 (6%)
	Fifth	21 (5.3%)
GPA	Mean ±SD	3.242±0.615
Type of Education	Medical	342 (85.5%)
	Engineering and computer science	46 (11.5%)
	Other	12 (3%)

Figure (1) showed the distribution of the impostor phenomenon degree among the 400 participants. The data revealed that 4.8% had few impostor characteristics, 29% experienced moderate IP feelings, 46.5% frequently had impostor feelings, and 19.8% experienced intense IP experiences.

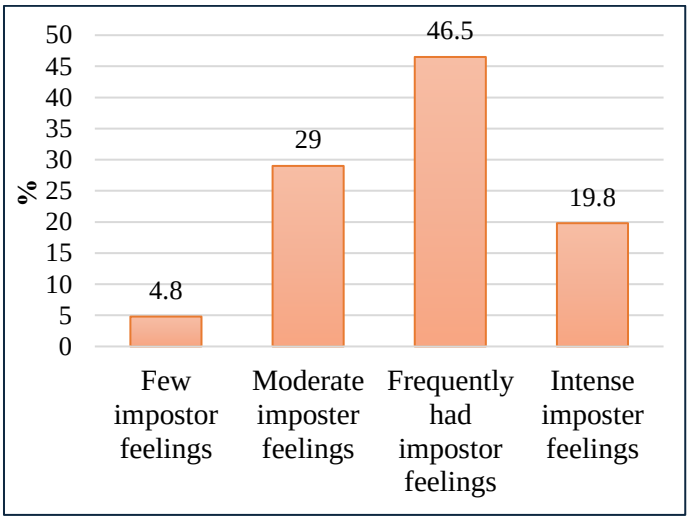

Fig. (1): Distribution of Impostor phenomenon degree among the participants (N=400).

Table (2) illustrated the prevalence of burnout domains among the participants. For emotional exhaustion, 38.5% scored at or above the 66th percentile, while 61.5% scored below. For cynicism, 39% scored at or above the 66th percentile, and 61% scored below. In academic efficacy, 65.8% scored at or above the 33rd percentile, and 34.3% scored below.

Table (2): Prevalence of burnout domains among the participants (N= 400)

Domains		Number (%)
Emotional exhaustion	Equal or above 66th percentile	154 (38.5%)
	Less 66th percentile	246 (61.5%)
Cynicism	Equal or above 66th percentile	156 (39%)
	Less 66th percentile	244 (61%)
Academic efficacy	Equal or above 33rd percentile	263 (65.8%)
	Less 33rd percentile	137 (34.3%)

Table (3) showed the relationship between sociodemographic data and impostor scores. Significant differences were observed in impostor scores between males and females (p=0.01) and between those residing with family versus those residing with colleagues (p=0.012). Academic year and type of education also showed significant associations with impostor scores (p<0.001). However, the place of residence and family income did not show significant relationships with impostor scores.

Table (3): Relation between sociodemographic data and impostor among the participants

Variable	Impostor score

	Mean SD	P
Sex		
- Male	68.39±15.2	0.01*
- Female	64.93±13.63	
Place of residence		
- Urban	67.24±14.49	0.086
- Rural	64.32±14.27	
Type of residence		
- Residence with family	65.26±14.41	0.012*
- Residence with colleagues	69.07±14.3	
Income of the family		
- High	67.57±17.39	0.61
- Moderate	66.26±14.11	
- Low	70.54±12.93	
Academic year		
- First	65.9±14.62	<0.001*
- Second	68.86±13.54	
- Third	61.66±13.6	
- Fourth	73.29±11.56	
- Fifth	79.29±13.65	
Type of Education		
- Medical	67.67±14.29	<0.001*
- Engineering and computer science	61.28±13.54	
- Other	54.67±14.27	

Table (4) showed the post hoc analysis for the one-way ANOVA, detailing the mean differences and p-values for academic year and type of education. Multiple significant differences were found between academic years, particularly between later years (Third, Fourth, and Fifth) and earlier years (First and Second). Significant differences were also observed between medical students and students in engineering/computer science and other education fields.

Table (4): Post-hoc analysis for the one-way ANOVA

Variable			Mean difference	P-value
Academic year	First vs	Second	-2.96	0.105
		Third	4.24	0.015*
		Fourth	-7.39	0.016*
		Fifth	-13.38	<0.001*
	Second vs	Third	7.2	<0.001*
		Fourth	-4.43	0.159
		Fifth	-10.42	0.002*
	Third vs	Fourth	-11.63	<0.001*
		Fifth	-17.62	<0.001*
	Fourth vs	Fifth	-5.99	0.148
Type of education	Medical vs	Engineering and Computer science	6.39	0.004*
		Other education	13	0.002*
	Engineering and computer science vs	Other education	6.62	0.152

Table (5) showed the correlation matrix for the imposter phenomenon score, GPA, and burnout domains. The imposter score was positively correlated with emotional exhaustion (0.4198) and cynicism (0.4053) scores and negatively correlated with academic efficacy score (-0.4175) and GPA (-0.1227).

Table (5): Correlation matrix for imposter phenomenon score & burnout domains and GPA

	Imposter score	GPA	Emotional	Cynicism score	Academic

			Exhaustion score		efficacy score
Imposter score	1				
GPA	-0.122721173	1			
Emotional Exhaustion score	0.419834557	- 0.037958422	1		
Cynicism score	0.405328599	- 0.189332919	0.515069807	1	
Academic efficacy score	- 0.417523437	0.200845835	-0.336014141	-0.538438676	1

According to the multiple linear regression analysis presented in table (6), identified burnout score (β=0.27, p<0.001), type of education (medical) (β=6.99, p<0.001), and type of residence (residing with colleagues) (β=2.69, p=0.008) as significant positive predictors of imposter phenomenon. GPA (β=−4.19, p=0.045) was a significant negative predictor. Sex (male) (β=2.78, p=0.050) showed a trend towards significance.

Table (6): Multiple linear regression for the factors affecting imposter phenomenon among studied students

Factor	B Coefficients	P-value	95.0% Confidence Interval for B
(Constant)	73.95	<0.001*	59.96 - 87.9
Burnout score	0.27	<0.001*	0.15 – 0.39
Type of education (medical)	6.99	<0.001*	1.89 - 10.11
GPA	- 4.19	0.045*	0.277- 4.87
Sex (Male)	2.78	0.050*	0.07 – 5.48
Type of residence (residing with colleagues)	2.89	0.000*	0.01 – 5.77

DISCUSSION

Prevalence of impostor phenomenon:

This study aimed to explore the prevalence of impostor phenomenon and its relationship with academic performance and burnout levels among students. Our study revealed a high prevalence of impostor phenomenon (IP) among Egyptian university students, the results showed a high prevalence of frequent impostor feeling (186, 46.5%), moderate imposter feeling (116, 29%) and 79 (19.8) experienced intense imposter phenomenon, exceeding the rates reported by global studies. For instance, a study by **Diaconescu *et al.*** [7] reported a higher prevalence of frequent impostor feeling (44.71%), 30.21% experienced moderate impostor feelings, and 17.22% had intense impostor feeling, our study indicates lower prevalence of intense impostor phenomenon. Another study conducted by **Duncan *et al.*** [10] showed high prevalence of frequent impostor feeling (44.2%), 40.1% of moderate IP feeling and 9.3% of participants had intense impostor feeling. A study by **Maqsood *et al.*** [11] reported high prevalence of frequent impostor feeling and lower proportion of intense impostor feeling. Both studies had a high prevalence of frequent impostor feeling but lower than our study. Also, our study indicated high proportion of intense impostor phenomenon. This likely is a reflection of the competitive nature of the higher education in Egypt, particularly for those in the medical field, and the lack of mental-health oriented support programs in the Egyptian universities. Compared to the study by **Qasem *et al.*** [12], which reported that approximately 47.5% of students had moderate impostor feelings, 43.7% experienced frequent impostor feelings, and only 7% experienced intense impostor phenomenon, **Alzufari *et al.*** [13] reported high proportion of moderate impostor feelings (46.4%) and 7.3% experienced intense impostor phenomenon. Our study indicated a higher proportion of intense and frequent levels of impostor phenomenon, which may be attributed to differences in culture and academic contexts.

Burnout prevalence: Among the participants, 154 (38.5%) experienced emotional exhaustion, 156 (39%) experienced cynicism, and 137 (34.3%) scored low in the academic efficiency domain. A study by **AlShahrani *et al.*** [14] reported that 32.3% of their participants experienced emotional exhaustion, 33.7% had cynicism, and 34.2% had low academic efficacy. Compared to a study by **Rosales-Ricardo *et al.*** [15] which reported higher proportion of emotional exhaustion 55.4% than both studies, 31.6% for cynicism and 30.9% scored low academic efficacy.

Associations with impostor phenomenon: Our study reported significant difference in experiencing impostor feelings according to gender, while other studies reported increased impostor feelings among females (61.79 ± 0.8) and (65.2 ± 15.5) [16, 17]. Our study found that male students experienced more imposter feelings (68.39 ± 15.2) than female students (64.93 ± 13.63). This may be due to cultural or contextual pressures on men in Egypt, especially in highly competitive fields, because of the fear of stigma as men are considered in the Egyptian culture as the family providers and responsibility takers, this may lead to internalization of negative feelings and self-doubt. Further research is needed to explore how cultural norms about gender differences affect IP experience.

We found that students living with their colleagues had more impostor characteristics than those who lived with their families (69.07 ± 14.3: 65.26 ±

14.41). This may be due to feelings of social comparison and lack of family support in student housing [18].

Our study participants had a mean GPA of (3.242±0.615) indicating good academic performance. Despite this, our study reported a negative correlation between impostor phenomenon and academic performance (r = - 0.1227), suggesting that students with high impostor feelings may have slightly decreased academic performance (GPA), with a negative predictor in regression (B=-4.19, p=0.045). This result was supported by a study by Jouf University, that found that lower GPA was associated with more imposter feelings (AOR of 47.78 for GPA < 3) [19]. Other studies have reported inconsistent results, which may reflect perfectionism [20].

The results reported a significant difference between academic years in relation to impostor feelings (p < <0.001) with a progressive increase through academic years to reach the peak in the fifth year, with the exception of the third year, which showed lower IP scores. These results are similar to the results found by a study conducted in the United States, which showed a peak in impostor scores in fourth-year medical students [2]. This may be linked to the increased residency-matching stress. Other studies showed increased imposter scores in the third year, which contradicts our results [11, 19]. This may be due to the distribution of the academic curriculum in Egypt over a longer period.

Medical students scored higher on the impostor scale than did students in other fields (p < 0.001). This is consistent with other studies that showed that healthcare students exhibit high impostor characteristics [11, 13, 21]. This may be linked to perfection and the highly competitive nature of the environment.

We found that impostor score correlated positively with a moderate degree of emotional exhaustion (r = 0.42) and cynicism (r = 0.405) and negatively correlated with academic efficacy (r = 0.418). This showed a prominent interrelation between impostor feelings and the core domains of burnout. A study by **Bravata *et al.*** [5] reported a significant link between high impostor feelings and emotional exhaustion. A study conducted by **Villwock *et al.*** [2] also supports these findings. Similar results are found by **Rosenthal *et al.*** [22] who showed a significant association between IP scores and the emotional exhaustion scale of the MBI. Also, persistent self-doubt has a negative effect on the emotional status of students where it leaves them susceptible to overwhelming negative feelings in response to increased academic demands [23]. The positive correlation between impostor feelings and cynicism is also supported by studies by **Nápoles *et al.*** [24] and **Villwock *et al.*** [2]. These results suggest that internalizing the fraudulent experiences by students may affect negatively their stick to their studies and increase self-doubt.

No other studies have measured the relationship between the impostor scale and the academic efficacy domain of burnout. A study by **Legassie *et al.*** [17] on internal medicine residents showed a significant relationship between impostor phenomenon and decreased personal accomplishment. Also, the negative relation in our study between GPA and impostor scores with the moderate negative correlation demonstrated between academic efficacy and impostor may indicate the presence of a vicious cycle where reduced academic performance is associated with increased impostor phenomenon characteristics and decreased academic efficacy which was associated with lower grades and increase in other burnout domains.

LIMITATIONS & RECOMMENDATIONS

The cross-sectional study design used in this study prevented us from determining the causality between IP and other associations. Also, the responses may be affected by events at the time of sample collection, the self-report and self-assessment mechanism of collecting responses may introduce bias, this may be improved in future studies by collecting data face to face by trained or professional individuals or by adding bias detection scale. The study was conducted in Egypt and showed differences to some global trends indicating the impact of social and cultural differences on the impostor feelings and highlights the need for multi-center studies to indicate and measure these cultural differences and its impact to personalize the suitable interventions for each region. This study found a significant difference between major fields of education, but our sample consisted of 85% healthcare students, further research is needed to address these differences and its causes. The correlation found between IP and academic performance parameters indicated the need for the development of supervision & support programs to decrease the impostor feelings experienced by the students and its negative effects on their wellbeing and encourage conduction of further investigations to other psychological predictors and their relation to IP.

CONCLUSION

Our study demonstrated the high prevalence of IP among Egyptian university students and its significant associations with various factors including male sex, type of residence, the last academic years, and medical education. IP was found to be positively correlated with emotional exhaustion and cynicism and was associated with lower academic efficacy and academic performance. The results contradict some other studies showing the presence of contextual and regional differences that has to be addressed in future research and demonstrated the need for support interventions to promote students' wellbeing and manage IP associations in university students.

Author contributions: Soso Shawky Mohamed and Nashwa Nabil contributed to the conceptualization of the study, supervised the entire work, critically reviewed the manuscript, and performed the data analysis. Mohamad Ashraf Salaheldin conceived the

research idea, prepared the tables, drafted the discussion and conclusion sections, and participated in writing the abstract. Muhammad Mahmoud Elhadidy also prepared the tables, drafted the discussion and conclusion sections, participated in writing the abstract, and handled the document formatting. Moamen DiaaAldin Mahdy wrote the introduction and methodology sections and participated in writing the abstract. Lujain Ayman Abbas drafted the table legends and participated in writing the abstract. All authors equally contributed to data collection. Finally, all authors read and approved the final version of the manuscript.

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