

Prevalence of Impostor Phenomenon among Medical Students in a Malaysian Private Medical School

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Abstract

Background: Impostor phenomenon is described as an "internal experience of intellectual fraudulence" among high achievers, which include medical students who often doubt their ability to become good doctors in the future. This study sought to determine the prevalence of impostor phenomenon among medical students and how impostorism is correlated with other psychological distresses namely anxiety, depression and low self-esteem. **Methods:** To conduct this cross-sectional study, various scales were distributed to all 4th-year medical students in Melaka-Manipal Medical College (MMMC), Muar campus to measure impostorism, depression, anxiety and self-esteem. Clance Impostor Phenomenon Scale (CIPS) was used to measure impostorism and a score of 62 was set as the cut off value to classify a participant as an "imposter". **Results:** Out of 300, 256 (85.3%) students completed the questionnaires. 48% and 44% of male and female students respectively scored as 'impostors' with no significant difference between the two genders. Positive correlations were noted between impostor phenomenon with low self-esteem ($\rho=0.56$), depression ($\rho=0.42$) and anxiety ($\rho=0.41$). Impostors significantly have stronger intentions of quitting medical school ($p < 0.001$) and felt that they were not ready to cope with challenges during housemanship ($p < 0.05$). **Conclusion:** Impostors suffer greatly from psychological distress. They are not confident to face the future challenges of housemanship and have stronger intentions of quitting the course. It is necessary for medical colleges to acknowledge this feeling and help the students to cope with it to ensure a smooth transition from medical school to housemanship period.

Key Words: Prevalence; Stress, Psychological; Students, Medical; Depression; Anxiety (Source: MeSH-NLM)

Introduction

Impostor Phenomenon (IP) was first observed in a clinical setting by Clance and Imes in 1978 among high achieving women who do not experience an internal sense of success.¹ Matthews and Clance defined (IP) as an "internal experience of intellectual phoniness" among high achievers.² Being in a community of high achievers, those in the medical field tend to more commonly experience IP. A study done in Ontario found that 43.8% of internal medicine residents have IP while another study in Wisconsin (2004) involving family medicine residents found that 41% of women and 24% of men experience IP.^{3,4}

A few studies have shown that females have a higher risk of developing IP.^{1, 5-6} Meanwhile, another study found the opposite result where Impostor score was higher in male academicians.⁷ However, another study found no significant difference in IP between both genders.⁸ Other studies have shown that there are significant differences in IP among ethnic minorities in the USA.⁹⁻¹⁰ Hence, a similar study to see if there are differences in IP among various ethnic groups in Malaysia is much needed. Although various studies have been done to study the link between social class and psychological distress,¹¹⁻¹³ data regarding relationship between social class and IP is very scarce.

Several studies have found that IP is correlated with depressive symptoms.^{4,14} Family physician who have high impostor traits were found to be also having high depressive symptoms.⁴ In the literature, results regarding the relationship between IP with anxiety and self-esteem are showing conflicting findings. While one study found that anxiety is strongly correlated with IP, another study found no connection between IP and anxiety.^{4,14} Another study meanwhile reported no relationship between self-esteem and IP.¹⁵ However, another study found negative correlation between self-esteem and Impostor score.¹⁶ 75% of family medicine residents with IP were also found to be worried that they will "not be ready to practice full-range

family medicine" after graduation.⁴ In view of all these findings, the relationship between IP among medical students and their confidence level to cope with challenges during housemanship and specialization needs to be assessed.

A study involving American medical students in a medical school in Jefferson showed that IP was found to be significantly associated with indices of burnout namely exhaustion, cynicism, emotional exhaustion and depersonalization.³⁵ Impostor phenomenon also can have dire implications on learning process of a medical student. Those with high impostor traits are less likely to express the views or volunteer answers and information as compared to their non-impostor peers. This may then lead to differences in style of learning which may require a tailored curriculum to take into account the huge number of medical students with high impostor traits.³⁵ These students also are more likely to avoid challenges and even decline many learning opportunities in fear of making mistakes.³⁹ In healthcare meanwhile, impostorism can have various negative outcomes including a poor reflection of the institution via the individual's actions.⁴⁰

This study aims to: (1) find out the prevalence of impostor phenomenon among medical students in a Malaysian medical school, (2) assess the factors contributing to impostor phenomenon, (3) assess the correlations between impostor phenomenon and the mental health of medical students and (4) determine the confidence level of medical students in facing challenges during their housemanship (internship period upon graduating from medical school). We hypothesized that the prevalence of IP among medical students to be high and it will have great impact on the mental health of the students. Findings of this study are vital in order to manage and reduce the psychological distress among the students.

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Methods

Study Design and Instruments

In order to attain our objectives for this study, we chose quantitative analytical cross-sectional study and we utilized questionnaire method to gather the data. The study was conducted from September 2015 to December 2015 and the study sample involved fourth year medical students of Melaka-Manipal Medical College (Muar Campus), Johor, Malaysia. Based on our calculation with 95% confidence level and a margin error of 5%, a sample size of 193 was calculated using Epi Info 7 software. A universal sampling method was used to collect the data. The questionnaires were distributed in person to the respondents. The main questionnaire that was used in this study included two sections; Section A and Section B. Section A elicited the respondents' demographic data and other related information while Section B consisted of 5 scales to measure levels of impostorism, self-esteem, anxiety and depression. This study was approved by the Research Ethic Committee of Faculty of Community Medicine MMMC, and all the participants signed a written informed consent form with assurance of confidentiality.

Demographic Questions And Other Related Information

Demographic data that were asked include; gender, age, ethnicity, religion, socioeconomic status, and if they have any close relatives who are doctors. They were also asked about their level of confidence to face housemanship, and if they had any thoughts of quitting this course in the past 3 months.

Clance Impostor Phenomenon Scale

There are few scales available to measure impostorism. The two most widely used scale is the Harvey Impostor Phenomenon Scale and Clance Impostor Phenomenon Scale (CIPS). CIPS was chosen because it was found to be more sensitive and reliable.¹⁷ The internally reliable and validated CIPS consists of 20 items that can be scored on a scale of one to five.¹⁷⁻¹⁸ Clance and Imes developed this scale to measure the level of impostorism and a cut off value of 62 had been used widely in all other researches as the cutoff point to classify someone as an impostor. Hence, this cut off value was also used in our study.¹⁹⁻²⁰

Rosenberg's Self-esteem Scale

To measure the level of self-esteem, we used the most common measure of self-esteem which is the Rosenberg's Self Esteem Scale which has internal consistency coefficients of 0.89.²¹ This scale was chosen because it is found to be suitable for assessment of self-esteem among higher education students.³⁶

Beck's Anxiety Inventory

Beck's Anxiety Inventory which is internally reliable and had been validated was used to measure if a person is having anxiety.²² The scale was found to show acceptable psychometric properties among adolescents.³⁷

PHQ-9

Depression was measured using Patient Health Questionnaire (PHQ)-9 which assesses the 9 depression symptoms based on DSM-V and is a reliable and valid measure of depression.²³ Research has shown that PHQ-9 is a valid and reliable scale to screen depression among college students.³⁸

Statistical Analysis

The statistical analysis of data was conducted using Epi Info 7 software. Participants' demographics were described by frequency. Gender differences in impostor, depression, anxiety, and self-esteem were compared using mean scores. Chi-square tests of association and relative odds were used to explore the association between categorized variables. Pearson Product Moment correlations (ρ) were used to estimate bivariate relationships between raw instrument scores.

Ninety-five percent confidence intervals were used in estimating the correlations and relative odds.

Results

Participants Demographics

Of the 300 surveys sent out, 256 completed forms were returned for a response rate of 85%. **Table 1** shows the distribution of respondents in this survey conducted in Melaka-Manipal Medical College, Muar Campus. Majority of the respondents were female with 60.9% and students of Malay ethnicity predominated at 43.36%. Most of the respondents also had relationship status of 'single' at 77.73%. Students from middle income families were the majority at 51.95% and those who were studying on scholarship at 59.38%. 149 (58.2%) respondents reported that they do not have any close relatives currently working as doctors.

Table 1. Demographic data of respondents.

PARAMETERS	NUMBERS (%) N=256
Gender	
Female	156 (60.9)
Male	100 (39.1)
Race	
Malay	111 (43.36)
Chinese	67 (26.17)
Indian	65 (25.39)
Others	13 (5.08)
Religion	
Islam	118 (46.09)
Hindu	53 (20.7)
Buddhist	50 (19.53)
Christian	29 (11.33)
Others	6 (2.34)
Birth order	
First	56 (33.73)
Middle	74 (44.57)
Last	36 (21.69)
Relationship status	
Single	199 (77.73)
Couple	57 (22.27)
Socioeconomic status	
Low income	64 (25.0)
Middle income	133 (51.95)
High income	59 (23.05)
On scholarship	
Yes	152 (59.38)
No	104 (40.62)
Having close relative as a doctor	
Yes	107 (41.8)
No	149 (58.2)

Gender Difference

Table 2 displays the gender differences between males and females in the mean impostor score, percentage of impostors, as well as mean depression, anxiety and self-esteem scores. 45.7% of respondents scored as impostors with no significant gender difference between males who scored as impostors (48.0%) and females (44.23%). The mean impostor score for females was 60.3 and male was 62.4 ($p = 0.14$). The mean depression, anxiety and self-esteem scores between males and females also showed no statistically significant differences ($p > 0.05$).

Table 2: Gender differences in the responses among respondents.

Statistic	Men	Women	p-value
Mean impostor score	62.4	60.3	0.14
Percent impostors	48.00%	44.23%	0.55
Mean depression score	6.36	6.75	0.56
Mean anxiety score	10.17	12.26	0.12
Mean self-esteem score	17.7	18.8	0.07

Impostorism

Table 3 shows the association between various factors and impostor phenomenon. The factors were gender, race, relationship status, having a close relative as a doctor, socioeconomic status, whether receiving scholarship or not, and whether they joined the medical course by personal choice or not. Results showed that none of these parameters have any association with impostorism.

Association of Impostorism with Depression, Anxiety, and Self-esteem

Impostor scores were also correlated with anxiety symptoms ($\rho = 0.41, p < 0.0001$) and with depressive symptoms ($\rho = 0.42, p < 0.0001$). Those who obtained high impostor scores also had the lowest scores for self-esteem ($\rho = 0.56, p < 0.0001$). Using depression, anxiety, and self-esteem scores, multivariate analysis was performed to predict impostor phenomenon. The outcome showed statistically significant results in which depression, anxiety and self-esteem are able to predict the impostor phenomenon as shown in **Table 4**.

Table 3: Association between various factors and impostor phenomenon

Characteristic	Impostor n (%)	Normal n (%)	Adjusted odds ratio (95%CI)	p-value	X ²
Gender					
Male	48 (48.0)	52 (52.0)	1.16 (0.70-1.93)	0.644	0.21
Female	69 (44.2)	87 (55.8)	1		
Race					
Chinese	28 (41.79)	39 (58.21)	1		
Malay	54 (48.65)	57 (51.35)	1.32 (0.71-2.43)	0.46	0.54
Indian	27 (41.54)	38 (58.64)	0.99 (0.5-1.97)	0.88	0.02
Others	8 (61.54)	5 (38.46)	2.22 (0.66-7.54)	0.31	1.01
Relationship Status					
Couple	23 (40.35)	34 (59.65)	1		
Single	94 (47.24)	105 (52.76)	0.76 (0.416-1.37)	0.36	0.85
Close Relative as a Doctor					
No	70 (47.0)	79 (53.0)			
Yes	47 (43.93)	60 (56.1)	1.13 (0.69-1.86)	0.63	0.23
Socioeconomic Status					
Low	30 (46.88)	34 (53.13)	1		
Medium	65 (48.87)	68 (51.13)	0.923 (0.51-1.68)	0.79	0.07
High	22 (37.29)	37 (62.71)	1.48 (0.72-3.05)	0.28	1.16
On Scholarship					
No	43 (41.35)	61 (58.65)			
Yes	74 (48.64)	78 (51.32)	0.74 (0.45-1.23)	0.23	1.34
Personal Choice					
No	21 (55.26)	17 (44.74)			
Yes	96 (44.04)	122 (55.96)	1.57 (0.785- 3.14)	0.2	1.64

Impostorism and Housemanship

Table 5 depicts the Chi square analysis which was done to determine: 1) If being impostors have an association with the students' readiness to cope with the challenges during their internship years; 2) If impostors have high tendency to have the feeling of quitting the medical course; and 3) If they are confident of becoming a medical specialist in the future. The results significantly showed that impostors felt they are not ready to face challenges during their internship years ($p < 0.05$, Odds Ratio = 5.16, X² = 4.84) as well as having the feeling of quitting the medical course ($p < 0.001$, Odds Ratio = 1.98, X² = 11.39) as compared to non-impostors. However, there is no significant difference between impostors and non-impostors in their confidence level to become a specialist in the future.

Discussion

The main aim of this study is to find the prevalence of IP among the students of a Malaysian medical school and it was found that 45.7% of medical students are impostors. This means that two out of five medical students have chronic feelings of self-doubt and fear of being discovered as an intellectual fraud. Those who have high impostor scores also tend to have high anxiety and depression scores, as well as low self-esteem scores, indicating that these are interrelated. Impostors also have lower confidence to face future challenges as a House Officer during housemanship and have a higher tendency to feel that they should quit the medical course. Gender, ethnicity and socioeconomic status did not influence impostorism in this study.

Table 4: Multivariate analysis to predict impostor scores.

Variable	Coefficient	Std Error	F-test	P-Value
Anxiety	0.174	0.068	6.4222	0.01188
Self-Esteem	-1.035	0.131	62.2068	0
Depression	0.318	0.138	5.2959	0.02219

Table 5: Chi square analysis between impostors and non-impostors.

Characteristic	Odds Ratio (95% CI)	p-value	χ^2
Readiness to cope with challenges during internship years	5.16 (1.03-25.71)	0.04	4.84
Feeling of quitting the medical course	1.98 (1.32-2.98)	0.001	11.39
Confident to become a specialist in the future	1.76 (0.38-8.11)	0.46	0.54

The prevalence of impostorism from this study, which is 45.7%, is almost similar as the prevalence obtained in the study done in Ontario in the year 2008 involving internal medicine residents with prevalence of impostorism in 41% women and 24% men. Similar prevalence was also noted in two other studies involving health profession trainees.^{3-4, 19} This shows that impostorism is extensively seen among those in the medical profession. When compared to impostorism among those from non-medical field, it is seen that the prevalence is much lower in those from non-medical field. A study involving college and research librarians found impostorism prevalence to be about 15% which is almost 3 times lower than prevalence in this study.⁴² Another study involving engineering students found that the prevalence of impostorism to be at 35% which again is considerably lower than prevalence found in this study.⁴³ One of the reasons could be due to medical students being perceived as high achievers, hence putting a huge load of pressure and stress upon them.³² Constant doubts about their capability and the fear of failing to live up to these expectations could also be the reasons behind this finding.³⁴ Medical students have many clinical rotations where they have to acquire medical knowledge and skills from each of the postings. Unfortunately, this often highlights the students' deficiencies more than their progress and competencies which further enhances their impostor feelings.²⁴ Having to cope with academic stress also contributes to their feelings of insecurity.³³

The prevalence of IP in our study showed no gender difference, although IP was first thought to be exclusively seen in females.¹ Our result is consistent with other research findings, which disproves the exclusively female prevalence of IP.⁸ Other psychological distresses like anxiety, depression and low self-esteem also showed no significant gender differences hence echoing other research findings.²⁵⁻²⁶

There are no significant differences in anxiety, depression and low self-esteem between males and females. This is in concordance with the findings made by Henning (1998) and Moffat.^{19, 27} The lack of gender differences may be due to the recent changes in the environment of medical schools, with increasing female enrolment as is the case in majority of Asian medical schools.^{19, 28}

Impostorism is also associated with anxiety and depression. However, since this is a cross sectional study, causality could not be determined. Based on this study, it is quite unclear as to how they are interrelated, whether the constant worry and self-doubt seen in impostors causes

anxiety and depression, or rather that anxiety and depression causes a person to be more prone to have impostor feelings.⁴ Thompson speculated that impostors' greater reporting of negative emotions as well as their tendency to attribute failure internally and overgeneralize a single failure may be a cause for the association with anxiety and depression.²⁹

This study also found that impostors have lower confidence to face the challenges once they become House Officers in the near future. This might be due to the students' own exposure to the abuses faced by the House Officers from the Medical Officers as well as specialists in the hospitals. This causes the students to majorly doubt whether they can perform well as a House Officer in the future.³⁰ A study involving House Officers in one of the hospitals in the city of Ipoh, Malaysia, has ranked harassments by the Medical Officers as one of the main causes for stress in their work.³⁰ The increasing number of medicolegal cases involving House Officers also may be a cause for the self-doubt among medical students. Impostors were also found to have a higher tendency of wanting to quit the medical course. This may be due to the fact that impostors feel that they are not competent enough to cope with the expectations of the institution.³¹

Considering that the prevalence of IP among medical students is very high and that it is strongly correlated with other psychological distresses, it is crucial that medical schools and educators take note of this issue and take the necessary steps in dealing with medical students with high impostor traits. Literature regarding approaches taken to deal with impostorism in the medical school nor among healthcare workers is scarce, hence this is a potential future research area of importance. A few authors who had done similar research regarding impostorism among medical students and healthcare workers had recommended general approaches to deal with this issue. One of the authors suggested that impostorism can be prevented or remediated via the use of techniques such as mentoring, identification as well as promotion of self-concept.⁴⁰ Another author meanwhile suggested a shift away from the traditional "shame-based" learning to a more open and consistent educational dialogue.³⁵ In order to foster development of overall self-efficacy, professional development programs beginning early in medical training may confer some benefit.⁴¹

One of the limitations of the study is the way the Clance Impostor Phenomenon Scale are scaled, in which the questions are all scaled in the same direction where numeral five corresponds to high impostor phenomenon and numeral one is lack of it. Secondly, the sampling of this research, which is convenience sampling of all the fourth year medical students in MMMC, may not reflect the findings in other years of study or other medical schools in Malaysia. There is also a lack of normative data regarding Impostor Phenomenon among other fields of study, thus preventing comparison between medical students and students from other courses.

If this survey is representative of students from other medical schools as well, it does indicate that a huge amount of medical students in Malaysia are suffering from Impostor Phenomenon and may have psychological distress like anxiety, depression and low self-esteem. They will also have low confidence to face Housemanship period in the future. Medical schools, especially the educators and tutors should assist medical students to allow a smoother shift into the Housemanship period. Impostors who are identified could be provided with counselling and moral support which may help in reducing their level of depression and anxiety. More focus by the educators towards the impostors, especially in improving their knowledge and clinical skills, may help to ease the impostor feelings once they feel that they are competent and can be a safe doctor in the future.

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Author Contributions

Conception and design the work/idea, Collect data / obtaining results, Analysis and interpretation of data, Write the manuscript, Critical revision of the manuscript, Approval of the final version, Obtaining financing: MYI, N'ASM. Contribution of patients or study material, Statistical advice, Administrative or technical advice: MYI.

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