Original Research Article

How Impostor Syndrome Affects Academic Performance and Leadership Virtues Among Undergraduate Clinical Year Medical Students

ABSTRACT

Impostor syndrome is described as a series of experiences in which an individual is uncertain about their true capability, skills, or achievements. Impostor syndrome may have a negative effect on medical students' life especially in the context of their academic performance and leadership virtues. Therefore, we aimed to study the prevalence, factors associated, the association of impostor syndrome and academic performance, as well as leadership virtues. A cross-sectional study among the undergraduate clinical year medical students in Manipal University College Malaysia (MUCM) was carried out from December 2021 to January 2022. Purposive sampling was used to enrol students for this study, the data were collected by the distribution of an online questionnaire and a total of 90 participants has responded. The analysis included frequency, percentages, mean, standard deviation, unpaired T-test, Chi-square test were done using Epi info software version 7.2. Among the students, 47.8% of students were suffering from impostor syndrome. Factors such as gender, ethnicity, nationality, intention to pursue fellowship and parents' occupation had an insignificant association with impostor syndrome. The students who did not have impostor syndrome thought they performed well academically (mean=15.7) compared to those who are experiencing impostor syndrome (mean=14.2). The P-value is 0.024 with a 95% CI of mean difference ranged from 0.19 to 2.75, which shows that there is a significant association between impostor syndrome and subjective academic achievement in undergraduate clinical medical students. The students without impostor syndrome had better leadership skills (mean=69.4) than the students who had impostor syndrome (mean=66.4). The P-value is 0.130 with a 95% CI of mean difference ranged from -0.89 to 6.83, which shows that there is no significant association between impostor syndrome and leadership virtues in undergraduate clinical year medical students. In summary, impostor syndrome is quite common among the students who are pursuing the medical course, thus more attention should be given to this issue. We recommend the education institution to introduce more motivational programmes to increase the confidence level of the students.

KEYWORDS: Impostor syndrome, impostor phenomenon, impostorism, academic performance, leadership virtues, medical student, cross-sectional study, Malaysia

INTRODUCTION

Impostor syndrome, impostor phenomenon, impostorism, fraud syndrome or the impostor experience is described as a series of experiences in which an individual is uncertain about their true expertise, talents, or accomplishments. They possess persevering internalized fear of being manifested as a "fraud". Regardless of the known exterior evidence regarding

their competency, those experiencing this circumstance remain persuaded that they are frauds and are not worthy of claiming their victory and triumph. [1] As per Audrey Ervin, a psychologist and academic director of the graduate program in counselling psychology at Delaware Valley University, impostor syndrome is “characterized by chronic feelings of inadequacy, incompetence, and fraudulence despite objective success. It is hard to internalize success and genuinely hold the belief that you are competent and capable.” [2] Impostor syndrome or phenomenon is not a mental disorder, instead, it is an experience that transpires in an individual and changes their persona.

In 1978, Pauline R.Clance and Suzanne A.Imes had published an article in which the term “Impostor Phenomenon” was introduced. According to this, Clance designated the first scale to measure the characteristics of the Impostor Phenomenon in 1985 which is known as the “Clance Impostor Phenomenon Scale (CIPS)”. This scale was created to determine the idea that individuals have a false perception of distinctive ineptitude despite being victorious by exterior merit.[1] A model encompassing six dimensions of the impostor phenomenon was created by Clance in her research paper whereby it stated that at least two criteria from the six dimensions have to be present for a person to be diagnosed with having Impostor Phenomenon or Syndrome. Other scales to measure impostor syndrome are as the follows: (1) Harvey Impostor Scale (HIPS) founded in 1981 by Harvey (3) Perceived Fraudulence Scale (PFS) founded in 1991 by Kolligian and Sternberg (4) Leary Impostorism Scale (LIS) founded in 2000 by Leary (5) Young Impostor Scale (YIS) founded in 2003 by Dr.Valerie Young.[3] In our current study, we are utilising the Young Impostor Scale (YIS) to assess the existence of impostor syndrome dichotomously. This scale is one of the latest and widely used to determine the presence or absence of impostor syndrome in many of the previous studies. [3]

The research did, later on, prove that impostor syndrome may affect both men and women, and it could also be associated with anxiety, stress, depression, and/or rumination. [1] Furthermore, previous studies showed that impostor syndrome is a very common issue among undergraduate students. The study done among chiropractic students in the United States showed that 46% of the female students and 32% of the male students had persistent feelings of Impostor Syndrome. [5] Another study done in the United States showed 57% of the computer science students had met the criteria of impostor syndrome. [4] In a previous study carried out among Pakistani undergraduate medical students, 47.5% of the participants experienced impostor syndrome, among them female students 58.7% had a higher risk of experiencing impostor syndrome compared to male students which was 41.3%. [6] In another earlier study carried out among the American medical students showed that 49.4% of female students had imposter syndrome and they were more likely to exhibit than male students; only 23.7% of male students had the same phenomenon. [7]

To add on, the earlier studies carried out on the prevalence of impostor syndrome and its factors associated among undergraduate medical students in Malaysia found out that 47.5% of the participants were having impostor syndrome with no significant differences between the male students (48%) and the female students (44.2%). [8] However, a study on how Impostor Syndrome affects academic performance and leadership virtues among undergraduate clinical medical students is yet to be studied.

Impostor syndrome may have an impact on medical students' life especially in terms of their academic performance and leadership virtues. Students with impostor syndrome often doubt their achievement or think they only got their success through plain luck. They are highly motivated and always well-prepared than required to ensure that no one will doubt their competency. [10] These are the outstanding criteria for high achievers, which may also be accompanied by a massive cost. Students might also be reluctant to answer any questions or speak up in class because they are concerned about being wrong and judged by others. [9] Even though they are performing well academically, it does not change their belief, and this may lead to constant anxiety. [10] It also showed that the impostor syndrome is significantly linked with burnout, which is an exhausting reaction caused by enormous and lengthened periods of stress. [7]

Impostor syndrome is often associated with leadership skills. For instance, a group can feel the impact of draining of time and resources with a student leader experiencing impostor syndrome due to his or her overworking and perfectionism. [11] The leader might set very high standards and expectations to the group members and their assignments, providing additional burden to them. A leader who is suffering from impostor syndrome often lacks confidence, therefore they tend to not receive or take up extra duties in order to avoid interference for them to complete their work perfectly. [12]

We expected that our study results could help find out if one's academic performance and leadership virtues are affected positively or negatively by impostor syndrome among undergraduate medical students in Malaysia. The benefits of our study may help medical students who are facing impostor syndrome on how to improve their academic performance and leadership virtues. To the best of our knowledge, little is known about relationship between impostor syndrome, academic performance, and leadership virtues among undergraduate medical students. In this context, we would like to further explore this topic and we aimed (1) to study the prevalence of impostor syndrome among undergraduate medical students, (2) to find out the associated factors of impostor syndrome, (3) to find out the association of impostor syndrome and academic performance, and (4) to find out the association between impostor syndrome and leadership virtues.

METHODOLOGY

A cross-sectional study among the undergraduate clinical year medical students in Manipal University College Malaysia (MUCM) was carried out from December 2021 to January 2022. There are two campuses in MUCM, Melaka campus which provides studies in Bachelor of Medicine and Surgery (MBBS) for Semester 1,2,3,8,9 and 10, Bachelor of Dental Surgery (BDS) and Foundation in Science (FIS); the Muar, Johor campus which offers studies in MBBS for Semester 6 and 7. We intended to find out the prevalence and its associated factors among the undergraduate medical students, therefore the students from the MBBS program were selected for our studies.

We calculated the sample size using the formula for estimating single population proportion. The estimated total population in our program was 800 students. We used 95% confidence interval, prevalence of impostor syndrome 74.5% [8], and precision 10%, the minimum sample size was 86. We also included the non-response rate of 10% and the final sample size was 96.

We used the non-probability purposive sampling method to enrol students from the MBBS program in MUCM. Inclusion criteria for this study were 1) undergraduate medical students in MBBS Program, 2) voluntary informed consent, and 3) students of Manipal University College Malaysia (MUCM). We excluded the students who did not wish to participate in the study. The participants were given a choice to engage in our study, therefore our data were attained by voluntary participation, and none were compelled to take part. Informed consent was included on the first page of the questionnaire, participants were told to sign the form before they start to answer, and they have the right to pull back their answer by any time without any reason. All data collected by us were kept private and confidential. The Research Ethics Committee, Faculty of Medicine, Manipal University College Malaysia (MUCM), Malaysia has given the approval to us to conduct the study.

The data were collected by the distribution of an online questionnaire, Google Forms, to targeted undergraduate medical students in Manipal University College Malaysia (MUCM) which involved MBBS students. Data were collected using questionnaire designed in English incorporating closed-ended and multiple-choice questions. The questionnaire consisted of four parts. The first part included the collection of an individual's demographic profile which consists of age, gender, ethnicity, nationality, academic year, parent's occupation, and intention to pursue a fellowship in the future. The second part had eight items, Young Imposter Scale (YIS) which was taken from a previous study to assess the imposter syndrome dichotomously, whether present or absent. It was in the form of questions and a student was considered positive for Imposter Syndrome if he or she answered 5 or more questions as "Yes ''. [6] The third part included five items Subjective Academic Achievement Scale (SAAS) which had a rating scale ranging 1-5, where the value 1 indicated low, and the value 5 indicated high satisfaction with one's academic achievement [13]. The fourth part encompassed the Leadership Virtues Questionnaire (LVQ) which had a total of four components as follows (1) Prudence, (2) Fortitude, (3) Temperance, and (4) Justice. The first component of LVQ is known to be having prudence and it is inclusive of five items. Secondly, fortitude as a component is comprehensive of five items. Thirdly, the component of temperance has three items whilst the last one was justice which involved six items. The LVQ had a rating scale ranging from 1-5. The response scales are as follows: (1) not at all, (2) once in a while, (3) sometimes, (4) fairly often, and (5) frequently, if not always. [14] The students were provided with a time limit of 20 minutes to go through the participant information and provide their informed consent voluntarily to participate in this study.

Data collected were entered into Microsoft Excel. Data were then analysed using Epi Info version 7.2. In the study, frequency and percentage of qualitative variables such as age group, gender, ethnicity, nationality, academic year, parent's occupation, intention to pursue a fellowship in the future and impostor syndrome were calculated. The range, the mean and standard deviation of quantitative variables such as academic performance and leadership virtues were calculated. The level of significance that we set was 0.05. All the statistical tests that were used to find out the association between independent and dependent variables are tabulated as below. The independent variable in our study is Imposter Syndrome whilst the dependent variable includes academic performance and leadership virtues.

Table 1: Statistical tests used in the study

Independent variables	Dependent variables	Statistical tests
Age group	Impostor Syndrome	Chi-square test
Gender	Impostor Syndrome	Chi-square test
Ethnicity	Impostor Syndrome	Chi-square test
Nationality	Impostor Syndrome	Chi-square test
Academic Year	Impostor Syndrome	Chi-square test
Parent's occupation	Impostor Syndrome	Chi-square test
Intention to pursue fellowship	Impostor Syndrome	Chi-square test
Impostor Syndrome	Academic performance	Unpaired T-test
Impostor Syndrome	Leadership virtues	Unpaired T-test

RESULTS

A total of 90 undergraduate students participated in this study and the response rate was 93.8%. Table 2 shows the demographic characteristics of the participants. Among the students, 65.6% were females while 34.4% were males. In terms of ethnicity, the highest response group came from Chinese and Indian with both having the same response which is 38.9%. Since this study was carried out in a private institution, we had a total response of 81 (90%) Malaysian students and 9 (10%) International students. [Table 2]

Table 3 shows the prevalence of impostor syndrome among undergraduate medical students. There are 47.8% of undergraduate medical students are experiencing impostor syndrome whereas 52.2% of them did not have syndrome. The mean score of academic performance among undergraduate medical students is 15.0, while the mean score of leadership virtues is 67.9. [Table 3]

Table 4 shows the relationship between the sociodemographic profiles and the impostor syndrome (IP) among undergraduate clinical medical students. There were no significant association between gender, ethnicity, nationality, parents' occupation, intention to pursue fellowship and impostor syndrome. [Table 4]

Table 5 shows the association between impostor syndrome, subjective academic achievement and leadership virtues among undergraduate medical students. There was significant difference of subjective academic achievement score between those who had impostor syndrome and those who did not. The students who have impostor syndrome has a mean score of 14.2 (SD=2.9) on the subjective academic achievement scale, which is lower than the students who do not have Impostor Syndrome with a mean score of 15.7 (SD=3.1); with the mean difference of 1.47 and 95% CI from 0.19 to 2.75. Whereas there is no significant association between impostor syndrome and leadership virtues in undergraduate medical students. [Table 5]

Table 2: Demographic characteristics among medical students (n=90)

Variable	Frequency (%)

Gender	
Male	31 (34.4)
Female	59 (65.6)
Ethnicity	
Chinese	35 (38.9)
Indian	35 (38.9)
Malay	6 (6.7)
Others	14 (15.6)
Fellowship	
Yes	63 (70.0)
No	6 (6.7)
Undecided	21 (23.3)
Nationality	
Malaysian	81 (90.0)
International Students	9 (10.0)
Parents occupation in the medical field	
Yes	16 (17.8)
No	74 (82.2)

Table 3: Prevalence of Impostor syndrome among undergraduate medical students (n=90)

Variable	**Frequency (%)**
Impostor Syndrome	
Present	43 (47.8)
Absent	47 (52.2)
Subjective Academic Achievement score (5-25)	
Mean (SD)	15.0 (±3.1)
Leadership Virtues (19-95)	
Mean (SD)	67.9 (±9.3)

Table 4: Association between demographic characteristics and Impostor Syndrome (n=90)

Independent	**Imposter Syndrome (IP)**	**Odd's Ratio (OR)**	**P-value**

variables	Present n (%)	Absent n (%)		
Gender				
Female	32(54.2)	27(45.8)	2.2(0.9, 5.3)	0.091
Male	11(35.5)	20(64.5)	**Reference**	
Ethnicity				
Chinese	17(48.6)	18(51.4)	0.9(0.2,5.3)	0.948
Indian	16(45.7)	19(54.3)	0.8(0.2,4.8)	0.846
Others	7(50.0)	7(50.0)	1.0(0.2,6.8)	0.999
Malay	3(50.0)	3(50.0)	**Reference**	
Nationality				
Malaysian	39(48.2)	42(51.9)	1.2(0.3,4.6)	0.833
Non-Malaysian	4(44.4)	5(55.6)	**Reference**	
Parent's occupation				
Non-medical field	35(47.3)	39(52.7)	0.9(0.3, 2.6)	0.844
Medical field	8(50.0)	8(50.0)	**Reference**	
Intention to pursue fellowship				
Yes	36(57.1%)	27(42.9%)	6.7(0.7,60.4)	0.058
Undecided	6(28.6%)	15(71.4%)	2.0(0.2,20.9)	0.557
No	1(16.7%)	5(83.3%)	**Reference**	

Table 5: Association between Impostor Syndrome, Subjective Academic Achievement Scale and Leadership Virtues Scale among undergraduate medical students of MUCM (n=90)

Variables	Impostor Syndrome		Mean Difference (95% CI)	P value
	Present	Absent		
Subjective Academic Achievement Scale (score)	14.2(2.9)	15.7(3.1)	1.47 (0.19, 2.75)	0.024
Leadership Virtues Questionnaire (score)	66.4(8.5)	69.4(9.8)	2.97 (-0.89, 6.83)	0.130

DISCUSSION

A cross-sectional study was conducted to study the association between impostor syndrome, academic performance and leadership virtues. The objective of this study was to

study the prevalence of impostor syndrome among undergraduate clinical year medical students. Secondly, we determined the relationship between the demographic details involving gender, ethnicity, nationality, parent's occupation, and intention to pursue leadership with impostor syndrome. Thirdly, we assessed the relationship between impostor syndrome and subjective academic performance, and the association between impostor syndrome and leadership virtues. In our study, the prevalence of impostor syndrome was 47.8%, which was higher compared to the previous study conducted among undergraduate medical students in Malaysia which had a prevalence of 45.70%. [8] But our finding was similar to the study conducted among Pakistani medical students which showed the prevalence rate of 47.5%. [6]

In this study we found out that there is no correlation noted between the gender and the impostor syndrome, among our female participants, 54.2% of them were found to have impostor syndrome while 35.5% of male participants were found to be having this syndrome. The earlier studies have shown mixed trends regarding gender distribution. Initially, impostor phenomenon was assumed to be predominant in high achieving women. However, further studies showed that this phenomenon is also quite frequent among males. [15] A study done among Austrian doctoral students concluded that the men scored higher mean impostor phenomenon value than women. However, it was still not significant enough to show the correlation as the previous studies based on gender ended with mixed results. Meanwhile, for the ethnicity, the majority of the respondents were noted to be Chinese, and Indians followed by other races and Malays respectively. And in Chinese students, the occurrence of Impostor Syndrome was noted to be at 48.6% compared to 45.7% occurrence in Indians. Even though there is a difference in the percentage of occurrence, yet it was noted to be insignificant. This may coincide indirectly with other research on this title which was done in Korea where that the marginalised or the coloured people tend to get Impostor Syndrome. [16] It was also noted that Korean citizens from the marginalised community have been affected mostly with this impostor syndrome. The results from our study may be insignificant as there was no marginalised community in our country, Malaysia and thus the occurrence cannot be associated with a specific ethnic group. The same results can be reflected in the variable of nationality as 48.2% of total Malaysian respondents had been admitted to having impostor syndrome while 44.4% of non-Malaysian students were suffering from this syndrome as well. Once again, the results turned out to be insignificant, as there might be little or no discrimination against foreign students in Malaysia, the learning environment is conducive for learning and does not affect the students' mental health. In our study, it was also shown that there was no significant association between parents' occupation and impostor syndrome. In a previous study conducted among medical students in a private college in Malaysia, it was also found that there was no significant association between close relatives as doctor and impostor syndrome. [8] Lastly, we also concluded that the intention to pursue fellowship was insignificant to this syndrome.

Academic performance is the outcome or achievement of students based on their effort. It is important to perform well academically as it brings a positive impact to their future, especially in medical students as they will be dealing with people lives after graduating. In our studies, the subjective academic achievement scale (SAAS) is used to measure the academic performance of undergraduate clinical medical students. The SAAS

was created to evaluate the subjective achievement of students concerning their peers' accomplishments, personal ambition, and academic performance. [13] Upon analysing our data, we found that there was a significant association between impostor syndrome and subjective academic performance among undergraduate clinical medical students. The undergraduate clinical year medical students who were not having impostor syndrome had a higher mean score in SAAS compared to the students who are suffering from impostor syndrome. This might be due to the fact that students with impostor syndrome are thinking that they are academically unprepared and, doubting their achievement. [17] To escape this feeling, students with impostor syndrome are presumably to develop academic dishonesty including cheating in exams, plagiarism and so on. [18] A previous study conducted in Kentucky, USA, showed there was no significant association between impostor syndrome and academic performance among medical students. However, 80% of the respondents with moderate or frequent impostor syndrome did not score well in their exams compared to students without impostor syndrome. [19] People with impostor syndrome often doubt their ability and lack confidence, and this was shown in a study done in Pakistan. The study showed that university students who have lower confidence perform worse in their academics. [20]

Good medical leadership is essential in creating high-quality healthcare. [21] Moreover, the healthcare system nowadays is slowly changing to a team-based care or a multidisciplinary approach. Hence, leadership is vital for undergraduate clinical medical students to prepare them for these roles in the future. [22] In our study, we used the Leadership Virtues Questionnaire (LVQ) to evaluate the leadership virtues among undergraduate clinical medical students. The Leadership Virtues Questionnaire (LVQ) was proven to be highly associated with transformational leadership, authentic leadership, and ethical leadership. The Leadership Virtues Questionnaire (LVQ) which have the different virtues approach to ethical leadership is a good tool to assess the leadership virtues and ethics of the participants. [14] Even though the undergraduate clinical year medical students who do not have impostor syndrome had a higher leadership score compared to the those who had impostor syndrome, the association between these two was not significant. Research carried out in Turkey studied the effects of feeling of worthiness, competence, and self-acceptance among students of sports management department on their leadership orientation. It has been proved that the students who felt worthy, competent and have a feeling of self-acceptance had a significant effect on the leadership orientation of the students. The students with high leadership orientation will also be more committed to their tasks and will have a higher level of success. [23]

There were few limitations in this study. As per known in general, since the exposure and disease are measured at the same point in time in a cross-sectional study, thus it is not possible to establish the temporal relationship between exposure or causative factor and the onset of the outcome. In this context, the exposure studied was the impostor syndrome while the outcomes were the academic performance and leadership virtues. The causal relationship between the impostor syndrome, academic performance and leadership virtues cannot be reflected in our study. Besides that, we were not able to study the incidence rate of imposter syndrome among undergraduate clinical year medical students. Thirdly, the study conducted has increased bias potential regarding the selection of population in our cross-sectional study

which encompasses only undergraduate clinical year medical students from one private medical institution only. As a consequence, the study cannot be generalized to other populations or settings. Moreover, any changes or difference overtime could not be observed.

CONCLUSION

Among undergraduate clinical year medical students in our study, 47.8% had impostor syndrome. Only subjective academic achievement of the students was found to be significantly associated with impostor syndrome. On the other hand, leadership virtues were shown to have no significant association with Impostor Syndrome. There was also an insignificant association between gender, ethnicity, nationality, parents' occupation, intention to pursue fellowship and impostor syndrome. As nearly half of the participants of this study are experiencing impostor syndrome, it can be assumed that quite a big percentage of medical students are affected by this syndrome. It is always better to prevent the occurrence of impostor syndrome, especially among medical students. This can be done by having the education institutions host motivating programs and talks frequently, and also to provide professional help to those students who need urgently.

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