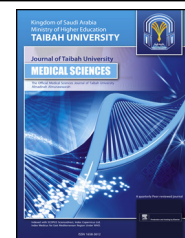




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Original Article

Self-doubt masked in success: Identifying the prevalence of impostor phenomenon among undergraduate dental students at Qassim University



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المخلص

أهداف البحث: للتحقيق في انتشار ظاهرة المحتال بين طلاب طب الأسنان الجامعيين واستكشاف علاقتها بالجنس والسنة الأكاديمية.

طرق البحث: تم إجراء البحث المقطعي الملاحظ على طلاب طب الأسنان الجامعيين من السنة الأولى إلى الخامسة في كلية طب الأسنان بجامعة القصيم، بين فبراير وأبريل 2021. تم استخدام مقياس كلانس لظاهرة المحتال المدار إلكترونيًا والمحقق مسبقًا من 20 عنصرًا كأداة لجمع البيانات.

النتائج: بلغ معدل الاستجابة 80.59% (162 مستجيبًا). أشارت النتائج إلى أن 8.8% من المشاركين كان لديهم حالات خفيفة، و 84.1% حالات متوسطة إلى شديدة، في حين أن 7.05% تعرضوا لتجارب مكثفة في ظاهرة المحتال. كان متوسط درجة ظاهرة المحتال أعلى بالنسبة للسنة الثالثة ولوحظ الحد الأدنى للقيمة لطلاب السنة الرابعة في طب الأسنان. تم العثور على علاقة ذات دلالة إحصائية بين درجات ظاهرة المحتال على مدار العام، بينما لم يلاحظ أي فرق كبير على أساس الجنس.

الاستنتاجات: تنتشر ظاهرة المحتال بصور وأعداد كبيرة بين طلاب طب الأسنان. قد يكون لذلك آثار جسدية وعقلية ضارة مع عواقب سلبية وبالتالي تؤثر

على تطوراتهم الفكرية والمهنية. تنفيذ المناهج المعدلة وخطط التطوير الذاتي هي بعض الحلول الموصى بها.

الكلمات المفتاحية: ظاهرة المحتال؛ مقياس كلانس لظاهرة المحتال؛ طلاب طب الأسنان الجامعيين

Abstract

Objective: To investigate the prevalence of impostor phenomenon (IP) among undergraduate dental students and explore its relationship with gender and academic year.

Methods: This study involved observational cross-sectional research involving undergraduate dental students (first to fifth year) at Qassim University Dental School, between February and April 2021. An electronically administered, 20-item pre-validated Clance Impostor Phenomenon Scale (CIPS) was used for data collection. Data analysis was performed using SPSS version 23. Mean IP scores of both genders were compared using t-tests, one-way ANOVA and Post-Hoc tests to establish the relationship between year-wise IP scores.

Results: The response rate was 80.59% (162 respondents). The results indicated that 8.8% of the participants had mild IP experiences, 84.1% had moderate to severe IP experiences, and 7.05% exhibited intense IP experiences. The mean IP score was highest and lowest in the third and fourth-year dental students, respectively. A

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statistically significant relationship was identified between year wise IP scores, while no significant difference was observed based on gender.

Conclusions: Impostor phenomenon is prevalent in substantial frequencies amongst dental students. This may have damaging physical and mental effects with negative consequences and could subsequently affect their intellectual and professional developments. The implementation of a modified curriculum and self-development plans are some of the recommended solutions.

Keywords: Clance impostor phenomenon scale; Cross-sectional studies; Dental education; Dentistry; Imposter syndrome; Undergraduate dental students

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Introduction

Impostor phenomenon (IP) is a psychological pattern of intellectual self-doubt characterized by the chronic feeling of inadequacy, persistent ambiguity about self-achievements, and an irrational fear of being discovered as an “imposter”, in an otherwise competent and capable individual.¹ Matthews and Clans defined impostorism as an “internal experience of intellectual phoniness”.² This phenomenon has been linked to psychological traits including anxiety, perfectionism, neurosis, and the lack of self-mastery, while sufferers document low self-esteem, high levels of frustration and despair, despite proof of competence and success.^{3–6} These apprehensions and distrust often lead impostors towards self-handicap attitudes and psychosomatic behaviors associated with limited performance.⁴

IP was first described in 1978 by Clance and Imes to explain the behaviors and attributes of a high achieving women’s cohort who were trying to understate their success.⁷ These women experienced a feeling of fraudulence because they did not attribute their success to their own abilities and instead assumed themselves to be not as brilliant and capable as perceived by others. They further defined impostors as people who considered their success in life as “fake” due to fortune, charisma, or favoritism; hence they escaped situations where they may possibly be “found out”.⁸ Although initially thought of as an inert attribute that affected female gender, IP has been documented in both genders. Currently, IP is viewed as an evoked affective response to specific situations and has been studied across various occupations, academic circles, and an array of populations including cultural sectors, employees, and university faculty around the world.^{8,9}

Students are among the high-risk groups for IP.¹⁰ As a result, IP has received increasing levels of attention over recent years due to its strong and damaging implications on medical students as well as health profession

institutions.¹¹ Existing literature relating to medical residents and students suggests the occurrence of IP in almost 50% of females and nearly 25% of males, with a range in the intensity of impostor feelings.¹² Progression through stages of a profession across academic levels in a medical school relates to times when imposter feelings particularly emerge. Moving from pre-clinical to clinical phases of training may be particularly challenging. Impostor literature has categorically demonstrated several potential implications for medical students. In addition, IP has been identified as a burnout factor and an obstacle to identity formation as a medical doctor that can subsequently exert potential adverse effects on patient care.^{11,12}

Moreover, IP has significant connotations for both dental education and training.¹³ Dentistry is a highly demanding profession and progression from the pre-clinical stage to the clinical stage is a challenging aspect of dental training. Dental students are expected to face stressful scenarios that they have not experienced before during their academic careers. This might lead to the feelings of distress and impostorism.¹⁴ Evidence suggests that dental students experience more depression, anxiety and stress when compared to both the general population and their medical peers.^{15–17} Murphy et al. reported higher levels of stress among dental students as compared to medical apprentices.¹⁸ Stressors in dental education can be attributed to numerous factors such as the increased demand of the profession, sequential apprentice status, highly competitive environments, perfectionism, individual qualities, and multifaceted clinical and academic requirements.¹⁹ These stressors can have significant implications on physical, mental and psychological wellbeing with resultant depression, low self-esteem and self-confidence, anxiety, frustration, dejection, and the absence of motivation.^{16,17}

There is a dearth of literature on IP in medicine/dentistry and existing studies are limited by small sample size and non-validated survey instruments.^{12–14} Few studies have explored IP among young adults and faculty in KSA^{20,21} and to the best of our knowledge, no previous study has investigated its prevalence among medical or dental students. To fill this knowledge gap and consider the paradigm shift in dental education with the implementation of a competency-based curriculum, the current study aimed to investigate the prevalence of IP among dental students in Qassim University, KSA and to explore its association with gender and the year of academic training. The assessment of IP amongst dental students will help to formulate strategies to overcome the incidence of IP by taking pre-emptive and remedial interventions, particularly designed to promote wellness among dental students.

Materials and Methods

This observational and cross-sectional study involved undergraduate dental students, from first to fifth year, enrolled during the academic session 2020–2021, at Qassim University Dental School, KSA by using non-probability purposive sampling. The qualtrics sample size calculator was used for sample size calculation.²² The total student population across the five academic years was 202. The confidence level and margin of error were set at 99% and 5%, respectively. The acceptable response rate for the

survey was calculated as 76.8% (155 responses). Ethical approval was sought from the institutional review board, Qassim University College of Dentistry (Ref Code#ST/6082/2020). All students were briefed on the purpose of the study. Informed consent was taken and participants were reassured about the confidentiality of data. Participation was anonymous and voluntary.

Study instrument

The Clance Impostor Phenomenon Scale (CIPS) was used to measure IP, with the permission of Dr. Pauline Rose Clance; this was due to its greater sensitivity and reliability.²² The CIPS is a pre-validated instrument consisting of twenty items. The respondents rate each item on a five-point Likert scale, ranging from 1 to 5 as follows: 1-not at all true; 2-rarely true; 3-sometimes true; 4-often true; 5-very true. The participants were required to answer questions related to their concerns regarding success, appraisals, gratitude and self-perceptions about their competency, intellect, and ability. The total score ranges from 20 to 100, yielded by adding individual score for each item. Higher score indicates more frequent and serious imposter feelings in an individual's life. The scoring produces four IP categories as follows: low (≤ 40); moderate (41–60); high (61–80); and intense (>80). CIPS was chosen as it not only determines the presence or absence of IP characteristics but also quantifies its extent. It exhibits superior reliability and sensitivity when compared to the Harvey IP scale.²³ Considering the Covid-19 situation, the questionnaire was designed as a google form and the link was sent via e-mail to dental students. A short description about the purpose of the study was also mentioned in the questionnaire along with demographic data. All students who responded to the email by submitting the filled questionnaire were included in the study. Conversely, the students who failed to respond were excluded.

Statistical analysis

Data analysis was performed by SPSS-23 (IBM Corp, USA). Descriptive statistics were documented as percentages and frequencies. The Chi-squared test was utilized to explore dependent and independent associations between variables. The mean IP scores of both male and female students were compared by using the t-test. Significance level (P-value) was set at <0.05 . One-way ANOVA and Tuckey's Post-Hoc test were employed to establish relationships between year wise analyses of IP scores.

Results

The e-questionnaire was sent to 202 potential study participants of which 162 dental students responded. Hence, the overall response rate was 80.59% including 86 (53.08%) males and 76 (46.9%) females.

The highest mean score of 3.59 ± 1.3 was noted for Item number 12. Conversely, the lowest mean score of 1.65 ± 1.02 was documented for Item number 9, as noted in Table 1. Mean IP score for male and female students in all academic years was calculated as 59.76 ± 15.25 and

Table 1: Item-wise score for the 20 items of the Clance Imposter Phenomenon Scale.

Item No	Question Statement	Mean \pm Standard Deviation
1	I have often succeeded on a test or task even though I was afraid that I would not do well before I undertook the task.	3.43 \pm 1.11
2	I can give impression that I'm more competent than I really am.	3.21 \pm 1.13
3	I avoid evaluations if possible and have a dread of others evaluating me.	2.50 \pm 1.33
4	When people praise me for something I've accomplished, I'm afraid I won't be able to live up to their expectations of me in the future.	2.96 \pm 1.38
5	I sometime feel I obtained my present position or gained my present success because I happened to be in the right place at the right time or knew the right people.	2.96 \pm 1.37
6	I'm afraid people important to me may find out that I'm not as capable as they think I am.	3.07 \pm 1.40
7	I tend to remember the incident in which I have not done my best more than those times I have done my best.	3.45 \pm 1.34
8	I rarely do a project or task as well as I'd like to do it.	2.80 \pm 1.14
9	Sometimes I feel or believe that my success in my life or in my job has been the result of some kind of error	1.65 \pm 1.02
10	It's hard for me to take compliments or praise about my intelligence or accomplishments.	2.70 \pm 1.30
11	At times, I feel my success has been due to some kind of luck.	2.49 \pm 1.26
12	I'm disappointed at times in my present accomplishments and think I should have accomplished much more.	3.59 \pm 1.30
13	Sometimes I'm afraid other's will discover how much knowledge or ability I really lack.	2.97 \pm 1.38
14	I'm often afraid that I may fail at a new assignment or undertaking even though I generally do well at what I attempt.	3.30 \pm 1.03

Table 1 (continued)

Item No	Question Statement	Mean \pm Standard Deviation
15	When I've succeeded at something and received recognition for my accomplishments, I have doubts that I can keep repeating that success.	2.81 \pm 1.45
16	If I receive a great deal of praise and recognition for something I've accomplished, I tend to discount the importance of what I've done.	2.42 \pm 1.30
17	I often compare my ability to those around me and think they may be more intelligent than I am.	3.18 \pm 1.36
18	I often worry about not succeeding with a project or examination, even though others around me have considerable confidence that I will do well.	3.18 \pm 1.18
19	If I'm going to receive a promotion or gain recognition of some kind, I hesitate to tell others until it is an accomplished fact.	3.40 \pm 1.06
20	I feel bad and discouraged if I'm not "the best" or at least "very special" in situations that involve achievement.	3.46 \pm 1.23

Table 2: Mean IP score for male and female students.

Gender	N	Mean IP Score \pm SD	P-Value ^a
Male	86	59.75 \pm 15.25	0.226
Female	76	59.18 \pm 14.86	

^a t-test, SD=Standard Deviation.

59.18 \pm 14.86, respectively, with no statistically significant difference between genders, as shown in [Table 2](#).

The results indicated that 8.8% of the study participants had mild IP characteristics, 84.1% exhibited moderate to severe IP feelings, and 7.05% had intense IP experiences. Detailed interpretations of IP scores for males and females are shown in [Tables 3 and 4](#). The chi-squared test indicated

that females had a significantly higher frequency of intense IP as compared to males (P-value = 0.013).

To establish the relationship between mean IP score and academic year, one way ANOVA was employed which showed a significant difference between the IP scores of students from different academic years (P-value = 0.01) ([Table 5](#)). The mean IP score was highest for third year dental students at 66.27 \pm 14.80. However, the lowest score was observed for fourth year students at 52.18 \pm 15.56.

The results were further verified by Tukey's Post Hoc test. This test found a statistically significant difference between the second and fourth year students (P-value = 0.03), between the third and fourth year students (P-value = 0.01), between the fourth and second year students (P-value = 0.03) and third year students (P-value = 0.01) and between the 5th year and third year students (P-value = 0.01) ([Table 6](#)).

Discussion

Impostorism is an emerging phenomenon that has recently gained attention and its identification can often overlap with the symptoms of anxiety, depression, burnout, and stress. It has been postulated that about 70% of millennials have experienced impostorism at least once in their lifetime.²⁴ The current research aimed to assess IP in dental students, during their academic journey, particularly during progression from the preclinical to clinical training stages. Overall, in the present study, 84.1% of dental students were suffering from moderate to severe impostor phenomenon feelings.

These findings are comparable with the outcomes of a study conducted at dental teaching hospitals in Pakistan in which 70.4% of fourth year students and dental interns presented with frequent to moderate IP characteristics.²⁵ Similarly, research on dental students in the Midwestern United States reported that 58.3% of respondents had IP levels exceeding the clinical threshold and experienced the significant influence of impostorism on their professional, personal, and academic lives.²⁶ Another study on Malaysian Medical students¹¹ revealed a high frequency of impostorism (45.7%) with no significant gender differences. Similarly, a study involving internal medicine residents at the University of Ontario reported commensurate findings.²⁷ A similar prevalence was reported among health professional trainees in other studies.^{13,28}

The overall frequency of IP feelings determined in previous studies ranged from 9% to 82%. The frequency of IP feelings predominantly depends on the screening tools and cut-off values that are utilized to assess IP symptoms.²⁹ This high variability in prevalence can be attributed to possible

Table 3: IP Score interpretation for male respondents.

Score	Academic Year					Total n (%)
	First n (%)	Second n (%)	Third n (%)	Fourth n (%)	Fifth n (%)	
<40	0 (0)	2 (11.8)	0 (0)	0 (0)	3 (14.2)	5 (5.8)
41–60	5 (50)	4 (23.5)	4 (20)	12 (66.7)	9 (42.9)	34 (39.5)
61–80	5 (50)	9 (52.9)	16 (80)	6 (33.3)	9 (42.9)	45 (52.3)
>80	0 (0)	2 (11.8)	0 (0)	0 (0)	0	2 (2.3)
Total	10	17	20	18	21	86

Table 4: IP Score interpretation for female respondents.

Score	Academic Year					Total n (%)
	First n (%)	Second n (%)	Third n (%)	Fourth n (%)	Fifth n (%)	
<40	0 (0)	0 (0)	1 (4.8)	8 (50)	0 (0)	9 (11.8)
41–60	6 (54.5)	6 (60)	8 (38.1)	4 (25)	9 (50)	33 (43.5)
61–80	5 (45.5)	2 (20)	9 (42.9)	0 (0)	9 (50)	25 (32.9)
>80	0 (0)	2 (20)	3 (14.2)	4 (25)	0 (0)	9 (11.8)
Total	11	10	21	16	18	76

Table 5: Academic year wise comparison of mean IP Score.

Academic Year	N	Mean IP Score \pm SD	P-value ^a
First Year	21	59.90 \pm 10.33	0.01
Second Year	27	63.00 \pm 15.09	
Third Year	41	66.27 \pm 14.80	
Fourth Year	34	52.18 \pm 15.56	
Fifth Year	39	56.08 \pm 13.64	
Total	162	59.49 \pm 15.03	

^a ANOVA Test.

publication bias where significant findings might be more likely to be published by academic journals. Moreover, this substantial variation could be the result of how investigators interpret specific scores by employing different diagnostic scales. For instance, some studies have used the CIPS tool with a score of <40 as no impostorism; 40–59 as mild IP; 60–79 as moderate IP; and >80 as severe IP.²³ Some authors suggest the use of 62 as a cut-off value on the CIPS scale, while others propose the use of a mean CIPS value in the study sample to differentiate between impostors from non-impostors.³⁰

However, the prevalence of impostorism has been found to be low in non-medical fields. In one study, the frequency of impostorism was found to be 35% in engineering students.³¹ Similarly, the frequency of impostorism was 15% in research librarian students; this is approximately three-fold less than the frequency prevailing among medical students.³² One possible explanation for this could be that medical students are always perceived as high achievers which keeps them under constant stress and pressure.³³ Moreover, the multilayered nature of clinical rotations in the medical and dental field is a perfect blend of theoretical knowledge, clinical skills and patient care that demands serious reflection.^{34,35} In the current study, a non-significant difference was evident between genders in the mean IP score that is in contrast with some of the earlier studies in which IP was exclusively linked to females.⁷ Accordingly, other studies have negated the concept of a solely female prevalence of IP.³⁶

Nevertheless, in the current study, the frequency of “intense IP” was significantly higher among female dental students as compared to males (11.8%; P-value = 0.013). These findings are consistent with the results of another study involving final year dental students and interns from dental teaching institutes of Lahore, where 14% of females reported intense feelings of IP.²⁸ Similarly, a study conducted at Azra Naheed Medical College, Pakistan reported more

Table 6: Tuckey’s post-hoc test for Multiple Comparisons.

Academic Year	Academic year for comparison	p-value	remark
First Year	Second Year	.94	NS
	Third Year	.46	NS
	Fourth Year	.29	NS
	Fifth Year	.86	NS
Second Year	First Year	.94	NS
	Third Year	.89	NS
	Fourth Year	.03	Sig
	Fifth Year	.30	NS
Third Year	First Year	.46	NS
	Second Year	.89	NS
	Fourth Year	.01	Sig
	Fifth Year	.01	Sig
Fourth Year	First Year	.29	NS
	Second Year	.03	Sig
	Third Year	.01	Sig
	Fifth Year	.77	NS
Fifth Year	First Year	.86	NS
	Second Year	.30	NS
	Third Year	.01	Sig
	Fourth Year	.77	NS

female IP sufferers (53%) than males with an overall prevalence of 47.5%.³⁷ Likewise, in another study carried out in Nishtar Medical College, Multan, a staggering frequency of 92–97% was observed (for moderate to severe scores) with more female students affected with the imposter phenomenon than males.³⁸ The results of another recent study conducted in King Saud University KSA also found a significant association of gender with intense IP in females. This higher prevalence of intense IP in females can be attributed to the higher prevalence of low self-esteem as compared to their male counterparts.^{39,40} Moreover, this might be the result of the relatively lower exposure in public of females in KSA that can lead to lower self-confidence and subsequently intense IP.

Regarding the year-wise analysis of IP scores in students, a significant difference was noted between the IP scores of students in different years. The IP score for third year dental students (66.26 \pm 14.79) was significantly higher than in other academic years. Similarly, Villwock et al.¹² documented a significant correlation between the IP score of medical students and academic training year, where IP levels peaked in the fourth academic year. Conversely, in three other studies that explored the relationship between IP score and academic training year, Legassie et al.,²⁷ Leach and colleagues,⁴¹ and Oriel et al.,²⁸ all failed to find

a significant association between academic year and IP scores. The results of their studies indicated impostorism was a static behavioral trait. However, the current study depicted a significant increase in IP scores in third year students. This could be attributed to the fact that students are in transition phase from the pre-clinical to the clinical phases of training, which is exceptionally challenging, highly competitive, stressful, and involves a steep learning curve. Moreover, as students progress through different academic years, they not only face new challenges as suggested by Clance but also consider themselves more accountable, independent and powerful.

Strength and limitations

This is the first study, to our knowledge, to have evaluated the prevalence of impostor phenomenon in a Saudi Dental School. The response rate of the study population was high. The current study has certain limitations that need to be considered. Firstly, this was a self-reported survey based in a single center. Self-reported surveys are subjective in nature; this can result in common method bias and thus, the results of single-centered studies cannot be generalized. Secondly, the CIPS was not validated in the Saudi cultural context. Furthermore, psychological comorbidities frequently associated with IP were not considered.

Recommendations

The prevalence of IP in the medical and dental profession has serious implications on the psychological and emotional wellbeing of the students. Since, IP is significantly associated with burnout, anxiety, depression, perfectionism, mental exhaustion and other psychological disorders, it follows that these study variables, in association with IP score, should be investigated in future mixed method multicenter studies. Moreover, CIPS should be validated in the Saudi cultural context in future multi-center studies, as this is the acceptable method to obtain equivalent metrics across different cultures for the attribute under consideration as suggested by Beaton et al.⁴²

Conclusions

Imposter phenomenon is prevalent in substantial frequencies and figures amongst dental students. This may have damaging physical and mental effects with negative consequences and can subsequently affect the intellectual and professional development of students. It is important to address this phenomenon to ensure the psychological wellbeing of future and upcoming dentists and as a result, improve the quality of care being provided to the patients. The implementation of a modified curriculum and self-development plans are some of the recommended solutions.

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Conflict of interest

The authors have no conflict of interest to declare.

Ethical approval

Study approval was acquired from the Dental Research Institutional Review Committee on 10th December 2020 (ST/6082/2020) at the dental school of Qassim University, KSA.

Author contribution

MVA: Collected data, analyzed data and prepared tables. **SN:** Literature search and write up. **AMK:** Literature search and write up. **SHK:** Data collection. **SS:** Data analysis, manuscript review. **MQJ:** conceived, designed and supervised the study, prepared tables, derived results, and carried out the final editing of the manuscript. All authors have critically reviewed and approved the final draft and are responsible for the content and similarity index of the manuscript.

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