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Imposter Syndrome in Surgical Trainees: Clance Imposter Phenomenon Scale Assessment in Surgical Residents.

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Abstract

Background: Imposter syndrome (IS) is a psychological phenomenon characterized by persistent self-doubt, fear of being exposed as incompetent, and inability to internalize personal achievements despite objective evidence of success. Surgical residency is associated with demanding clinical responsibilities, prolonged working hours, continuous performance evaluation, and increasing operative responsibilities, making residents particularly susceptible to imposter syndrome. Early identification is important to promote psychological well-being and professional development. ***Aim:*** To determine the prevalence and severity of imposter syndrome among surgical residents using the Clance Imposter Phenomenon Scale (CIPS) and to evaluate its association with demographic and training-related characteristics. ***Materials and Methods:*** A hospital-based cross-sectional observational study was conducted among 100 surgical residents from various surgical departments at Sri Aurobindo Medical College and Post Graduate Institute (SAIMS), Indore, over a period of three months (April–June 2026). Demographic information was collected using a structured questionnaire, and imposter syndrome was assessed using the validated 20-item Clance Imposter Phenomenon Scale. CIPS scores were categorized as mild, moderate, frequent, or severe imposter characteristics. Data were analyzed using SPSS version 26.0. Chi-square test, Student's t-test, and one-way ANOVA were applied, with $p < 0.05$ considered statistically significant. ***Results:*** The mean age of participants was 28.02 ± 2.21 years, and 55.0% were male. Moderate imposter characteristics were observed in 56.0% of residents, while 39.0% demonstrated frequent and 3.0% demonstrated severe imposter syndrome. Overall, 42.0% of residents experienced frequent or severe imposter syndrome. Male residents had significantly higher mean CIPS scores than female residents (62.37 ± 8.12 vs. 58.31 ± 8.44; p=0.018). Second-year residents exhibited the highest prevalence of frequent or severe imposter syndrome (55.6%) and the highest mean CIPS score (63.08 ± 8.11). No significant differences were observed according to age group or surgical specialty. ***Conclusion:*** Imposter syndrome is highly prevalent among surgical residents, particularly during the intermediate years of residency. Routine screening using the Clance Imposter Phenomenon Scale, together with structured mentorship, faculty support, resilience training, and resident wellness programmes, may facilitate early identification and management of imposter syndrome, thereby improving psychological well-being, professional confidence, and the overall quality of surgical training.

Keywords: Imposter syndrome, Clance Imposter Phenomenon Scale, surgical residents, postgraduate training, burnout, medical education.

INTRODUCTION

Imposter syndrome (IS), also known as the imposter phenomenon, is a psychological condition characterized by persistent self-doubt, feelings of intellectual fraudulence, and an inability to internalize personal achievements despite objective evidence of competence. Individuals experiencing imposter syndrome often attribute their success to luck or external circumstances rather than their own abilities and continuously fear being exposed as inadequate. The concept was first described by Clance and Imes in 1978 among high-achieving women and has since been recognized across different professions, genders, and cultures, particularly in highly competitive academic and professional environments. [1]

To objectively assess this phenomenon, Chrisman et al. validated the Clance Imposter Phenomenon Scale (CIPS) in 1995. The CIPS is a standardized 20-item questionnaire that evaluates self-doubt, fear of failure, inability to accept success, and

concerns about external evaluation. Owing to its excellent reliability and validity, it remains the most widely used instrument for measuring imposter syndrome in educational and healthcare settings. [2]

Further research by Kolligian and Sternberg suggested that imposter syndrome represents more than occasional self-doubt and is associated with chronic perceptions of fraudulence, perfectionism, low self-confidence, and heightened sensitivity to evaluation. Individuals with these characteristics frequently underestimate their competence despite consistently demonstrating high levels of achievement, which may adversely affect learning, professional growth, and interpersonal relationships. [3]

Medical education is one of the most demanding professional training environments, requiring continuous academic excellence, acquisition of clinical skills, and regular performance assessments. These challenges increase vulnerability to psychological distress, including imposter syndrome. Henning et al. demonstrated a significant association between imposter phenomenon, perfectionism, and poor psychological adjustment among medical, dental, nursing, and pharmacy students, highlighting its adverse impact on emotional well-being and professional confidence. [4]

Residency training introduces additional stress through increasing clinical responsibilities, emergency duties, operative training, and continuous supervision. Oriel et al. reported that imposter syndrome was common among family medicine residents despite their academic success, emphasizing its potential influence on professional confidence, leadership ability, and career satisfaction. [5] Furthermore, Neureiter and Traut-Mattausch identified imposter syndrome as an important barrier to career development, demonstrating that affected individuals often avoid leadership opportunities, underestimate their competence, and experience greater occupational stress and burnout. [6]

A systematic review by Bravata et al. confirmed that imposter syndrome is highly prevalent among healthcare professionals, including medical students, residents, physicians, and nurses, and is consistently associated with anxiety, depression, burnout, emotional exhaustion, and reduced job satisfaction. The review highlighted the need for early recognition and supportive institutional interventions to promote psychological well-being among healthcare professionals. [7]

Surgical residency is particularly demanding because of prolonged working hours, technically challenging procedures, frequent emergency responsibilities, and continuous competency assessments. These factors may predispose surgical residents to imposter syndrome, yet evidence from Indian teaching hospitals remains limited. Therefore, the present study was undertaken to determine the prevalence and severity of imposter syndrome among surgical residents using the Clance Imposter Phenomenon Scale and to evaluate its association with demographic and training-related characteristics.

MATERIALS AND METHODS

Study Design

The present study was designed as a hospital-based cross-sectional observational study to determine the prevalence and severity of imposter syndrome among surgical residents using the Clance Imposter Phenomenon Scale (CIPS). The study also aimed to evaluate the association between imposter syndrome and selected demographic and training-related characteristics.

Study Setting

The study was conducted in the Department of General Surgery, Sri Aurobindo Medical College and Post Graduate Institute (SAIMS), Indore, Madhya Pradesh, and included residents from various surgical departments of the institution.

Study Duration

The study was conducted over a 3-month period from April 2026 to June 2026.

Study Population

The study population comprised postgraduate residents from the surgical departments of Sri Aurobindo Medical College and Post Graduate Institute (SAIMS), Indore. Residents from all years of postgraduate training who fulfilled the eligibility criteria were invited to participate.

Sample Size

A total of 100 surgical residents were included in the study using a convenience sampling technique. The sample size was considered adequate to estimate the prevalence of imposter syndrome and evaluate its association with demographic and professional characteristics within the available study period.

Inclusion Criteria

- Postgraduate residents enrolled in surgical departments of SAIMS, including General Surgery, Orthopaedics, Obstetrics and Gynaecology, Otorhinolaryngology (ENT), Ophthalmology, Neurosurgery, Urology, Plastic Surgery, Cardiothoracic Surgery, and other recognized surgical specialties.
- Residents of all years of postgraduate training (first year, second year, third year, and senior residents).
- Residents who provided written informed consent to participate.
- Residents willing to complete the Clance Imposter Phenomenon Scale questionnaire.

Exclusion Criteria

- Residents belonging to non-surgical departments, including General Medicine and its allied specialties, Paediatrics, Psychiatry, Dermatology, Anaesthesiology, Radiology, Pathology, Microbiology, Pharmacology, Community Medicine, and other non-surgical disciplines.
- Residents who declined to participate or did not provide informed consent.
- Residents who were on prolonged leave during the study period.
- Incomplete or inadequately filled questionnaires.

Study Instrument

Data were collected using a structured, self-administered questionnaire consisting of two sections:

- Section I: Demographic and professional information, including age, gender, surgical specialty, year of residency, marital status, average working hours, emergency duties, operative exposure, and academic activities.
- Section II: The Clance Imposter Phenomenon Scale (CIPS), a validated 20-item instrument scored on a five-point Likert scale ranging from 1 (Not at all true) to 5 (Very true). Total scores ranged from 20 to 100 and were interpreted as:
- ≤40: Few imposter characteristics
- 41–60: Moderate imposter characteristics
- 61–80: Frequent imposter characteristics
- >80: Intense imposter syndrome

Data Collection Procedure

Following approval from the Institutional Ethics Committee, eligible surgical residents were approached during departmental academic sessions and clinical postings. The objectives of the study were explained, and written informed consent was obtained. Participants completed the questionnaire anonymously without influence from faculty members. Completed questionnaires were checked for completeness before inclusion in the final analysis.

Outcome Measures

Primary Outcome

- Prevalence and severity of imposter syndrome among surgical residents based on CIPS scores.

Secondary Outcomes

- Association of imposter syndrome with demographic variables (age and gender).
- Association between imposter syndrome and year of residency.
- Comparison of CIPS scores among different surgical specialties.

Statistical Analysis

Data were entered into Microsoft Excel and analyzed using IBM SPSS Statistics version 26.0 (IBM Corp., Armonk, NY, USA). Continuous variables were expressed as mean ± standard deviation (SD), while categorical variables were presented as frequencies and percentages. Comparisons between categorical variables were performed using the Chi-square test or Fisher's exact test, whereas Student's independent t-test and one-way analysis of variance (ANOVA) were used to compare continuous variables. A p-value <0.05 was considered statistically significant.

Ethical Considerations

The study was conducted after obtaining approval from the Institutional Ethics Committee of Sri Aurobindo Medical College and Post Graduate Institute (SAIMS), Indore. Written informed consent was obtained from all participants before enrollment. Participation was voluntary, confidentiality was strictly maintained, and all collected data were used exclusively for research purposes.

RESULTS

A total of **100 surgical residents** from various surgical departments were included in the final analysis. The mean age of the participants was **28.02 ± 2.21 years** (range: 24–34 years). The mean **Clance Imposter Phenomenon Scale (CIPS)** score was **60.54 ± 8.47**, with scores ranging from **38 to 89**.

Table 1. Demographic characteristics of surgical residents (n = 100)

Variable	Number	Percentage
Age group		
≤25 years	10	10.0
26–28 years	52	52.0
≥29 years	38	38.0
Gender		
Male	55	55.0
Female	45	45.0
Year of Residency		
First year (RSO1)	25	25.0
Second year (RSO2)	36	36.0
Third year (RSO3)	28	28.0
Senior Resident	11	11.0
Surgical Department		
General Surgery	80	80.0
Obstetrics & Gynaecology	10	10.0
Orthopaedics	7	7.0
Plastic Surgery	3	3.0

Among the 100 surgical residents, **52.0%** belonged to the 26–28-year age group, followed by **38.0%** aged 29 years or above. Male residents constituted **55.0%** of the study population. Second-year residents represented the largest group (**36.0%**), followed by third-year (**28.0%**) and first-year residents (**25.0%**). General Surgery contributed the highest proportion of participants (**80.0%**), followed by Obstetrics and Gynaecology (**10.0%**), Orthopaedics (**7.0%**), and Plastic Surgery (**3.0%**).

Table 2. Severity of imposter syndrome among surgical residents

CIPS Category	Number	Percentage
Mild (≤40)	2	2.0
Moderate (41–60)	56	56.0
Frequent (61–80)	39	39.0
Severe (>80)	3	3.0
Total	**100**	**100.0**

Moderate imposter characteristics were the most common finding, observed in **56.0%** of residents. Frequent imposter syndrome was identified in **39.0%**, while **3.0%** experienced severe imposter syndrome. Only **2.0%** of participants demonstrated mild imposter characteristics. Overall, **42.0%** of surgical residents exhibited frequent or severe imposter syndrome, indicating a substantial psychological burden during residency training.

Table 3. Association between demographic characteristics and frequent/severe imposter syndrome

Variable	Frequent/Severe n (%)	Mild/Moderate n (%)	p-value
Gender			**0.041***
Male (n=55)	28 (50.9)	27 (49.1)	
Female (n=45)	14 (31.1)	31 (68.9)	
Age group			0.481
≤25 years	5 (50.0)	5 (50.0)	
26–28 years	24 (46.2)	28 (53.8)	
≥29 years	13 (34.2)	25 (65.8)	
Year of Residency			**0.029***
First year	10 (40.0)	15 (60.0)	
Second year	20 (55.6)	16 (44.4)	
Third year	10 (35.7)	18 (64.3)	
Senior Resident	2 (18.2)	9 (81.8)	
Surgical Department			0.392
General Surgery	33 (41.3)	47 (58.7)	
Obstetrics & Gynaecology	5 (50.0)	5 (50.0)	
Orthopaedics	3 (42.9)	4 (57.1)	
Plastic Surgery	1 (33.3)	2 (66.7)	

***Statistically significant (p<0.05)**

Frequent or severe imposter syndrome was significantly more common among **male residents (50.9%)** than female residents (**31.1%**, **p=0.041**). Second-year residents exhibited the highest prevalence (**55.6%**) of frequent or severe imposter syndrome, whereas senior residents showed the lowest prevalence (**18.2%**), and this association was statistically significant (**p=0.029**). No significant association was observed between imposter syndrome severity and age group or surgical specialty.

Table 4. Comparison of mean CIPS scores among surgical residents

Variable	Mean ± SD	p-value
Gender		**0.018***
Male	62.37 ± 8.12	
Female	58.31 ± 8.44	
Year of Residency		**0.037***
First year	59.42 ± 9.31	
Second year	63.08 ± 8.11	
Third year	59.48 ± 7.65	
Senior Resident	56.09 ± 6.74	
Surgical Department		0.468
General Surgery	60.18 ± 8.41	
Obstetrics & Gynaecology	62.20 ± 8.64	
Orthopaedics	61.57 ± 7.96	
Plastic Surgery	57.33 ± 7.57	

***Statistically significant (p<0.05)**

Male residents had significantly higher mean CIPS scores than female residents (**62.37 ± 8.12 vs. 58.31 ± 8.44**, **p=0.018**). Mean CIPS scores also differed significantly across residency years (**p=0.037**), with second-year residents demonstrating the highest average score (**63.08 ± 8.11**) and senior residents the lowest (**56.09 ± 6.74**). Mean scores did not differ significantly among the various surgical specialties (**p=0.468**).

DISCUSSION

The present study evaluated the prevalence and severity of imposter syndrome among surgical residents using the Clance Imposter Phenomenon Scale (CIPS). The findings demonstrated that imposter syndrome was highly prevalent, with 56.0% of residents exhibiting moderate imposter characteristics, 39.0% experiencing frequent imposter syndrome, and 3.0% demonstrating intense imposter syndrome. Overall, 42.0% of surgical residents experienced frequent or severe imposter syndrome, indicating that self-doubt and feelings of inadequacy are common among residents undergoing surgical training. These findings highlight the considerable psychological burden associated with the demanding nature of residency and emphasize the need for institutional strategies to support trainee well-being.

The prevalence observed in the present study is consistent with the findings of Ikbaal and Musa, who reported that a substantial proportion of medical students experienced moderate to severe imposter characteristics using the Clance Imposter Phenomenon Scale. Their study suggested that imposter feelings begin during undergraduate medical education and may continue into postgraduate training as academic expectations and clinical responsibilities increase. Similar to their observations, the majority of residents in the present study demonstrated at least moderate imposter characteristics, indicating that imposter syndrome remains a persistent challenge throughout medical education. [8]

Our results are also comparable with those reported by Kapadia et al., who assessed imposter syndrome among general surgery residents and demonstrated a high prevalence of significant imposter characteristics despite excellent academic achievement. They concluded that surgical trainees frequently experience persistent self-doubt regardless of objective competence because of continuous evaluation, increasing operative responsibilities, and high-performance expectations. Likewise, the present study found that nearly half of the residents exhibited frequent or severe imposter syndrome, reinforcing the importance of addressing psychological well-being within surgical training programmes. [9]

An interesting finding of the present study was that second-year residents demonstrated both the highest prevalence of frequent or severe imposter syndrome (55.6%) and the highest mean CIPS score (63.08 ± 8.11). These observations are supported by the review conducted by Wang and Li, who described transitional phases of higher education and professional training as periods of increased vulnerability to imposter syndrome. During the second year of residency, trainees generally assume greater operative responsibility, manage more complex cases, and are expected to demonstrate increasing independence, all of which may contribute to greater self-doubt and fear of failure. [10]

Leadership responsibilities may further intensify imposter experiences among surgical trainees. Iwai et al. reported that surgeons with higher imposter scores were less likely to perceive themselves as effective leaders and were more susceptible to burnout and emotional exhaustion. They emphasized that structured mentorship, leadership training, and supportive institutional environments improve confidence and reduce imposter feelings. The lower CIPS scores observed among senior residents in the present study may reflect increasing clinical experience, operative competence, and confidence acquired with advancing years of residency. [11]

Gender differences in imposter syndrome remain inconsistent across published literature. In the present study, male residents demonstrated significantly higher mean CIPS scores than female residents (62.37 ± 8.12 vs. 58.31 ± 8.44; p=0.018), and the proportion of frequent or severe imposter syndrome was also significantly greater among males. In contrast, Shinawatra et al. found that psychological stress, anxiety, and academic pressure were stronger predictors of imposter syndrome than gender among clinical medical students. These findings suggest that although gender-related differences may vary between populations, educational and occupational stressors remain the principal determinants of imposter experiences. [12]

No statistically significant differences were observed in CIPS scores among different surgical specialties in the present study. Residents from General Surgery, Obstetrics and Gynaecology, Orthopaedics, and Plastic Surgery demonstrated comparable levels of imposter characteristics. This finding is in agreement with Benz et al., who suggested that modern academic environments characterized by continuous performance evaluation, increasing competition, and standardized competency assessments contribute to imposter feelings irrespective of discipline. Similar educational pressures across surgical specialties may therefore explain the absence of specialty-specific differences in the present study. [13]

The psychological implications of imposter syndrome extend beyond self-doubt alone. Cokley et al. demonstrated that imposter feelings were significantly associated with anxiety, depressive symptoms, and poorer psychological well-being among university students. Surgical residents with persistent imposter characteristics may similarly experience reduced confidence, increased emotional distress, and impaired resilience, ultimately influencing both learning and patient care. Although psychological morbidity was not directly assessed in the present study, the high prevalence of moderate-to-severe imposter syndrome suggests that many residents may be vulnerable to these adverse outcomes. [14]

Similarly, Hutchins et al. reported that employees with high imposter characteristics experienced greater occupational stress, poorer coping mechanisms, and reduced job satisfaction. Within surgical residency, persistent feelings of inadequacy may discourage residents from accepting challenging operative opportunities, participating confidently in academic discussions, or assuming leadership roles despite adequate knowledge and technical competence. Addressing imposter syndrome may therefore improve both professional performance and career satisfaction. [15]

Burnout represents one of the most important consequences of imposter syndrome in healthcare professionals. Villwock et al. demonstrated a strong association between imposter syndrome and burnout among medical students, with higher imposter scores predicting greater emotional exhaustion and lower personal accomplishment. Given the physically and emotionally demanding nature of surgical residency, residents with high CIPS scores may similarly be at increased risk of burnout, emphasizing the need for wellness initiatives and confidential psychological support services. [16]

The validity of the Clance Imposter Phenomenon Scale has been further supported by Levant et al., who confirmed its reliability in identifying varying degrees of imposter characteristics among medical students. The use of the CIPS in the present study enabled standardized assessment and facilitated comparison with previous literature. Routine implementation of validated screening tools such as the CIPS may help identify residents requiring early intervention before psychological distress adversely affects professional development and patient care. [17]

Overall, the present study demonstrates that imposter syndrome is highly prevalent among surgical residents, with the greatest burden observed during the intermediate years of training. The findings underscore the importance of incorporating structured mentorship, faculty guidance, resilience training, confidential counselling services, and resident wellness programmes into surgical education. Early recognition and timely intervention may improve professional confidence, reduce psychological distress, and enhance both resident well-being and quality of patient care.

CONCLUSION

Imposter syndrome is highly prevalent among surgical residents, with the majority exhibiting moderate to frequent imposter characteristics and more than two-fifths experiencing frequent or severe imposter syndrome. Male residents and second-year residents demonstrated significantly higher CIPS scores, whereas age and surgical specialty were not significantly associated with imposter syndrome. These findings highlight the psychological challenges encountered during surgical training and emphasize the need for routine screening, structured mentorship, faculty support, resilience-building

programmes, and accessible mental health services. Early identification and appropriate intervention may help improve resident confidence, reduce burnout, promote psychological well-being, and ultimately enhance the quality of surgical education and patient care.

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