ORIGINAL ARTICLE

# Prevalence of Impostor Syndrome and Its Association with Anxiety Among Undergraduate Students: A Cross-Sectional Study

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**Abstract**

**Background:** A psychological phenomenon known as Impostor Syndrome has recently attracted more attention in scholarly and scientific circles, especially due to its effects on medical students. This study was carried to determine the prevalence of impostor syndrome among undergraduate students at Rehman Medical Institute (RMI) and its association with anxiety among students of RMI.

**Material and methods:** An analytical cross-sectional study was conducted in RMI Allied Health Sciences, concentrating on the prevalence of Impostor Syndrome and its association with anxiety. Questionnaires were distributed in hard form across RMI disciplines (RCRS, RCN, and RCAHS) with a sample size of 302 in which all willing undergraduate first to final year students of Allied Health Sciences were included. Students who had anxiety and uses medication for anxiety or having panic attacks were excluded from our study. Convenience sampling was used for data collection. SPSS version 2022 was used for the analysis of the data.

**Results:** Data was gathered and analysed from a total of 302 participants. The mean score for anxiety was 10.12 ± 5.23 and for imposter syndrome was 62.04 ± 11.06. Chi-square analysis revealed a strong association between anxiety and impostor syndrome. The results of the analysis showed that there were no statistically significant differences in anxiety and Impostor Syndrome according to age, gender, discipline, or academic year.

**Conclusion:** The study's findings indicate that Impostor Syndrome was present in most undergraduate students to varying degrees and that anxiety and Impostor Syndrome were significantly correlated. The research found no significant differences in Impostor Syndrome levels by gender, age, or study year. The finding of a strong positive correlation between Impostor Syndrome and anxiety further substantiated the link between students' heightened anxiety levels and feelings of inadequacy.

**Keywords:** Impostor syndrome, anxiety, prevalence

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## INTRODUCTION

A psychological phenomenon known as Impostor Syndrome (IS) has recently attracted more attention in scholarly and scientific circles. Imposter syndrome is a psychological and behavioural health care phenomenon, that makes the individuals doubt their talents and accomplishments. Despite their genuine success, they are unable to internalize their accomplishments and credit their success to other factors such as chance, mistakes, or other people's ignorance.[1] This intriguing psychological quirk has drawn a lot of attention from researchers, especially due to its effect on medical students who encounter a great deal of stress.[2] The IS, initially noted by Clance & Imes in 1978, is sometimes referred to as perceived fraudulence, fraud syndrome, or imposter syndrome.[3, 4] Although it is not a mental illness, it is thought to be a psychological pattern in which people feel self-doubt about their achievements and a recurring, frequently internalized worry of being revealed as "fraudsters".[5]

IS leads to anxiety, stress and depression where people suffering from it live in constant fear of being labelled as "impostors", thinking that people will eventually find out about their alleged shortcomings, even in the face of concrete proof of their credentials, successes, and knowledge. This way of thinking causes

them to feel as though they don't belong in their learning or work environments, which breeds anxiety, self-doubt, and a nagging sensation of inadequacy.[6] The prevalence of IS in graduate students has been found to range from 56% to 82%, according to a systematic review published in 2020.[7] IS is found in several health-related professionals, including general surgery residents (76%), practicing physicians (22%), and training officers (60%). In the US, studies have found the prevalence of IS to be 30% in students studying medicine, dentistry, nursing, and pharmacy, and 39% in those studying chiropractic.[8]

According to a systematic review, the use of antidepressants, anxiety, and depression diagnoses from the past are also linked to severe or extremely severe symptoms of IS.[9] In 2020 a literature review reported that 47.8%, 62.6% and 45.7% of medical students had IS in Malaysia, Pakistan and Brazil respectively.[10] Another study conducted on undergraduate medical students, reported mild, moderate, and extremely severe IS symptoms in majority of the students.[11] Similarly, a pilot study conducted on medical residents and students reported that approximately 50% of females and approximately 25% of males had varying degree of IS.[12] Individuals suffering from IS experience higher levels of anxiety than non-imposters when under acute stress , thus IS was the regarded as the most reliable indicator of overall psychological suffering.[11, 13]

Another literature review reported that medical students, residents, and doctors in United Stated are more prone to report burnout than the whole US population associated with higher suicide risk in physicians.[8] The medical education environment is competitive and demanding, posing significant psychological challenges to students such as imposter syndrome and anxiety, especially in high achievers, during their exams.[2] There is limited research regarding the prevalence of IS and its association with anxiety. Therefore, the present study explores the prevalence of IS and its association with anxiety among the undergraduate students at Rehman Medical Institute (RMI) Peshawar, Pakistan.

## MATERIAL AND METHODS

A cross-sectional study was conducted in RMI at the department of allied health sciences from June 2024 to November 2024. Ethical approval was taken from graduate study committees of Rehman College of Rehabilitation Sciences (RCRS), Rehman College of Allied Health Sciences (RCAHS) and Rehman College of Nursing (RCN). Convenience sampling technique was used for data collection. Sample size of 302 was calculated using Open EPI with the population of 1401. The Clance Impostor Phenomenon (Clance IP) questionnaire was used to assess impostor syndrome with a score of less than 40 showing few imposter characteristics, scores between 41 and 60 presenting moderate IS characteristics, scores between 61 and 80 presenting frequent IS characteristics and a score higher than 80 suggesting intense IS experience. The Generalized Anxiety Disorder-7 (GAD-7) questionnaire was employed to evaluate anxiety levels categorized as 0-4 minimal anxiety, 5-9 mild anxiety, 10-14 moderate anxiety and 15-21 severe anxiety. Data analysis was conducted using the latest version of SPSS. A chi-square test was performed to determine the association between impostor syndrome and anxiety among RMI students.

## RESULTS

Data was collected and analysed from a total of 302 participants. Of the total about 56.9% (n=173) of the participants were females while 42.4% (n=129) were males. Out of the total population, the maximum number of participants i.e., 70.7% (n=215) were in the age group of 22-24 years followed by the age group of 19-21 years 18.8% (n=57) and 25-27 years 9.9% (n=30). In terms of academic standing, out of 302 participants 54.9% (n=167) were from the third year, 31.3% (n=95) were from the fourth year and 10.9% (n=33) were from the final year. Regarding where they were studying, 53.3% (n=161) participants were recruited from RCAHS, 32.1% from RCN and 14.6% (n=44) participants were from RCRS. For the Imposter syndrome, about 1% (n=3) of participants reported few Impostor characteristics, 42.4% (n=129) experienced moderate Impostor feelings, 49.7% of the sample (n=151) reported frequent Impostor feelings, and 4.9% (n=15) experienced intense Impostor feelings. Fisher’s Exact test

was applied to find association between impostor syndrome and anxiety. The test statistics were reported to be 29.7 with a significant association between impostor syndrome and anxiety($p < 0.001$) . (Table 3)

For anxiety, about 14.8% (N=45) of participants had scores between 0-4, about 31.9% (N=97) of the participants scored between 5-9, about 32.2% (N=98) had scores ranging from 10-14, and 19.1% (N=58) of participants scored between 15-21.

The mean ± SD for anxiety was 10.12 ± 5.23 while that of IS was 62.04 ± 11.06. Pearson correlation was applied to find correlation between impostor syndrome and anxiety. The analysis revealed a moderate positive correlation ($r= 0.350$, $p < 0.001$) between anxiety and imposter syndrome. (Table 2)

Table 1 Demographics

| Variable | Frequency | Percentage |
|---|---|---|
| Gender | | |
| • Male | 129 | 42.4 |
| • Female | 173 | 56.9 |
| Age in years | | |
| • 19-21 years | 57 | 18.8 |
| • 22-24 years | 215 | 70.7 |
| • 25-27 years | 30 | 9.9 |
| Year of study | | |
| • First year | 0 | |
| • Second year | 7 | 2.3 |
| • Third year | 167 | 54.9 |
| • Fourth year | 95 | 31.3 |
| • Fifth year | 33 | 10.9 |
| Discipline | | |
| • RCRS | 44 | 14.6 |
| • RCAHS | 161 | 53.3 |
| • RCN | 97 | 32.1 |

*Table 2 Correlations*

| | | Anxiety | Imposture |
|---|---|---|---|
| Anxiety | Pearson Correlation | 1 | .350** |
| | Sig. (2-tailed) | | .000 |

Table 3 Associations

| | Value | df | Exact Sig. (2-sided) |
|---|---|---|---|
| Fisher's Exact Test | 29.697 | 9 | P <0.001 |

## DISCUSSION

This study assessed the incidence of IS and its relationship with anxiety among undergraduate students, revealing a high prevalence of IS with a mean ± SD of 62.04 ± 11.06. Over 85% of participants reported feeling like impostors, consistent with prior research showing IS to be common among student populations, particularly in competitive fields such as medicine, law, and academia. For instance, Parkman emphasized that IS is prevalent among students in high-stakes disciplines.[12] Similarly, findings from 2018 studies on medical students in Malaysia and Brazil highlighted a strong association between IS, anxiety, and depression.[14] These results align with our findings, which demonstrate a significant positive correlation between IS and anxiety.[15]

Further, our research identified varying degrees of IS severity among participants, with 49.7% experiencing frequent IS feelings and 4.9% reporting intense IS. This distribution is comparable to previous studies, such as the 2022 study, where clinically significant IS was reported by 59.2% of participants.[16] Consistent with earlier research, students with heightened IS exhibited higher anxiety levels, underlining the psychological vulnerability associated

with IS.[15]

Interestingly, this study found no statistically significant differences in IS levels between genders or across academic years, echoing findings from Brazil and Sultan Qaboos University.[14, 17] However, some studies indicate otherwise; for instance, Harvard Medical School and a Saudi Arabian study found that female students reported higher IS levels.[17 18] Regarding academic years, while some studies found no variations[19], others suggested that IS may peak during specific years, such as the first or fourth years of medical programs.[20]

Age also did not emerge as a significant factor affecting IS levels, consistent with findings from Saudi Arabia and the University of New Mexico.[21] However, McGowan and Hutton observed that younger students tended to have higher IS scores than their older counterparts.[14]

## CONCLUSION

The study's findings indicate that Impostor Syndrome (IS) was present in most undergraduate students to varying degrees and that anxiety and IS were significantly correlated. The research found no significant differences in IS levels by gender, age, or study year, suggesting that these factors did not affect the prevalence of IS in this sample. The finding of a strong positive correlation between IS and anxiety further substantiated the link between students' heightened anxiety levels and feelings of inadequacy. These findings are consistent with past research highlighting the prevalence of IS, particularly in educational environments where students aim for excellence.

## LIMITATIONS:

The findings of this study cannot be applied to all undergraduate students or medical students across Pakistan. This is because the research focused on a small number of specific institutions. As a result, we cannot confidently say that the same patterns would be found in other universities or colleges in the country

The study was conducted in a specific geographic area, and this context may have influenced the results. Cultural factors can play a significant role in how students experience and express Impostor Syndrome. To gain a more complete understanding of IS among medical students, it would be serviceable to provide equivalent education in different geographic regions, as this could reveal how diverse cultural backgrounds affect these feelings

## RECOMMENDATIONS:

A longitudinal study design is highly recommended. Unlike a cross-sectional approach, which looks at a single moment in time, a longitudinal study would follow the same group of students over an extended period. This method would provide greater precision in the findings and allow researchers to observe how feelings of Impostor Syndrome and anxiety develop and change over time. By tracking students' experiences throughout their academic journey, researchers can gain a clearer understanding of how these feelings evolve, which can lead to more effective interventions and support systems for students facing these challenges.

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