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PREVALENCE OF IMPOSTER SYNDROME AND ITS ASSOCIATION WITH SELF-ESTEEM AMONG UNDERGRADUATE PHYSIOTHERAPY STUDENTS IN KARACHI: A CROSS-SECTIONAL STUDY

Anchal Mandhan
Liaquat National Hospital
Prity Devi
Jinnah Postgraduate Medical College
Ujala Bajaj
Jinnah Postgraduate Medical College
Ritika Batra
Jinnah Postgraduate Medical College

Author Details

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Corresponding E-mails & Authors*:
Anchal Mandhan

Abstract

Introduction: Imposter syndrome is a tendency to experience frequent feelings of self-doubt, inadequacy, and fear of being exposed as incompetent, despite evidence of one's ability or successs. Low self-esteem is another feature of individuals suffering from imposter syndrome; the lower that the self-esteem, the higher the possibility that people will question their competency. Left unchecked, it might have lifelong negative implications on them as adults in terms of psychological distress as a result of imposter syndrome.

Objectives: To assess the prevalence of imposter syndrome and it's association with self-esteem among undergraduate physiotherapy students.

Methods: The study is cross-sectional and includes participants from various institutes like LNSOP, UMDC, JPMC, JSMU, DUHS, Ziauddin university, Indus university. It involves 930 undergraduate physiotherapy students, excluding those with psychological illness.

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Result: The study surveyed 930 undergraduate physiotherapy students in Karachi, with 77.2% female and 69.4% over 20 years old. Most were third-year students with GPAs between 3.0 and 3.7. Findings revealed that imposter syndrome (IP) was influenced by several factors. Males reported lower incidences of both mild (71.9%) and frequent (82.0%) IP than females. Older students experienced IP more frequently, while freshmen reported the least. Students with GPAs below 2.9 had fewer mild IP occurrences, and those with higher family pressure reported more IP. A strong negative correlation was found between self-esteem and IP, with high-esteem students mainly experiencing mild IP, while low-esteem students reported only severe IP. This highlights the role of self-esteem in mitigating IP.

Conclusion: For the first time to our knowledge, This study highlights the impact of perceived family pressure on imposter syndrome among undergraduate physiotherapy students, showing that family expectations contribute to low self-esteem, a key factor in feelings of inadequacy. It suggests the need for interventions that foster supportive family environments and boost self-esteem to reduce imposter syndrome and improve student confidence and academic success.

INTRODUCTION

Background

Medical students often experience high levels of stress anxiety, and depression which can impact their academic performance and overall well being[1, 2]. The main reasons are that students have to learn a lot of new material quickly, they have to take difficult tests out of a worry that failing them may ruin their future, and they don't get enough chances to review their previous knowledge. They also suffer from significant burdens including social , emotional , family problems etc [3, 4] . Medical schools strives to cultivate knowledgeable , skilled and professional physicians some elements of the training process may have unforeseen consequences that erode student's mental health and emotional resilience ultimately undermining the core values and goals of medical education[5]. If mental health issues go unnoticed or untreated they can persist into adulthood and have severe

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consequences for students pursuing health related fields. These issues can significantly impact their personel and professional lives leading to reduced quality of life , increased risk of suicidal thoughts , decreased academic achievements , compromised professionalism , decreased empathy towards patients (6, 7). Therefore students are under immense pressure to excel academically about their future and struggling to fit in with the academic system resulting in a perfect storm of stress and anxiety(7). In today's world, where success is typically evaluated by accomplishments, many people experience feelings of inadequacy despite their successes. These subtle doubts can cause a gap between what they have accomplished and how they see themselves.This phenomenon commonly referred to as imposter syndrome.

In 1978, psychologists Pauline Clance and Suzanne Imes first defined the imposter phenomenon, often referred to as imposter syndrome, fraud syndrome, or imposterism. This intriguing psychological pattern is marked by overwhelming feelings of phoniness and guilt that often plague high achievers(8). Despite clear evidence of their competence and accomplishments, those experiencing this phenomenon doubt their own abilities, convinced they are less intelligent or capable than others perceive them to be(9). The individual with Imposter Phenomenon is unable to accept that their achievements are not the result of their own abilities or skills, but rather of luck or external factor.(10, 11)

The impostor cycle, which is essentially a pathognomonic feature of imposter syndrome, happens when people with Imposter Syndrome encounter an assignment, a hurdle, a duty, or other duties associated to achievement. This achievement-related task can be broadly classified into two types in individuals with imposter syndrome: over-preparation and procrastination(12). Those with Imposter Syndrome over-prepare and believe they are an impostor because they believe they must work harder than others to get the same goal—an objectively untrue belief(13). When people with Imposter Syndrome procrastinate, they believe that because of their hurried "last-minute" preparation, they are a phoney and will eventually be exposed as such. the perceived brevity of the sense of success, or

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another poorly understood neurobiological mechanism of Imposter Syndrome, there is a failure to internalize this sense of success. (14)

Clance has also proposed four key aspects of the family that can support the emergence and continuation of intellectual property: (i) Imposters' belief that their skills are unusual when compared to other family members; (ii) family messages emphasizing the value of intelligence and the notion that success comes with little work; (iii) disparity between feedback regarding impostor ability and success from family and other sources; and (iv) absence of positive reinforcement. Additionally, it has been suggested that a major contributing cause to the emergence of impostor concerns is overprotective parents.(15)

Medical students, who are known to have higher prevalence and levels of psychological distress than age-matched peers, suffer from a reduced quality of life when they experience impostor syndrome on a regular basis, resulting from factors including academic pressure, financial issues, lack of emotional support, and the perception of unattainable expectations(16). Individuals with Imposter Phenomenon have a tendency to put off completing projects, which makes it difficult for them to lead a team(17). They also tend to set unrealistic goals that demoralize other workers because they believe that their own shortcomings are preventing them from reaching their potential. This can make people with Imposter Phenomenon even less able to lead teams or make decisions(18). It can also increase their risk of developing chronic illnesses, psychological distress, emotional suffering, and significant mental health issues, such as; work-related stress, under performance, anxiety, depression, neuroticism, burnout, low self-esteem, maladaptive perfectionism, diminished career development and drug dependence, and in rare circumstances, even suicidal thoughts.(19)

In spite of the fact that impostor syndrome is neither classified as mental nor clinical disorder in the "Diagnostic and Statistical Manual of Mental Disorders," psychologists and other experts recognize the existence of an extremely real and distinct form of formal self-doubt.(20)

According to reports, Self-esteem is a major prerequisite and predictor of IP within student populations. Evaluating oneself positively or negatively is known as self-esteem, which is the

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evaluative aspect of self-knowledge.(21) It is a person's degree of self-satisfaction or unhappiness as well as how much they believe they are a good and capable human being (Coopersmith, 1967). Individuals who hold a negative self-perception on their capacity to replicate past successes exhibit low levels of self-efficacy.(22)Good mental and emotional balance, competence, confidence, high levels of productivity, positive outlooks, problem-solving skills, and emotional regulation have all been linked to high self-esteem(23). On the other hand, poor self-esteem can make people feel desperate, inadequate, helpless, depressed, and even more likely to commit suicide. Self-esteem influences physical, mental, and linked health-related behaviours in the present and the future.(15, 24, 25)

Self-esteem can be increased through gaining achievements and accomplishments, according to Piedmont (2002) and Rothman (2000). Those who ignore their achievements, on the other hand, do not internalise them. Doubt, worry, and the imposter syndrome consequently undermine one's sense of self-worth. As long as they succeed or receive praise and helpful criticism from others, their sense of self-worth is high and their emotions of inferiority are low(26). If they don't reach the pre-established goal, though, their emotions of IP will worsen and their self-esteem will collapse.(22) It is critical for medical students to have self-esteem. Meeting one's own or one's family's expectations is just one of the many difficulties that medical students must deal with. Medical school can be a tremendous shock, leading to poor self-esteem, which can show as imposter syndrome, as medical students are high achievers who have succeeded academically.(8)

According to previous researches, about half of female medical students experience imposter syndrome, compared to one-fourth of male students, and the severity of these feelings varies over the duration of medical education. Impostor syndrome is more common in medical students during the transitioning from preclinical to clinical phases of training can provide a significant challenge(19). IP is assessed using the reliable Clance Imposter Phenomenon Scale (CIPS), which measures its severity. In a study of medical students, there was significant imposterism in 25% of the male and 50% of the female students. A recent small study revealed that 54% of incoming medical students

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had impostor syndrome scores over the cutoff, considerably increased at the end of the Medical -3rd year and remain the same at the end of the Medical -4th year. Similar findings have been found in studies on graduate medical education.(27)

Research has looked at the reasons of Imposter Phenomenon, and findings suggest that race, ethnicity, and/or immigration status may contribute to the persistent feeling of unworthiness that underlies Imposter Phenomenon in individuals(10)Furthermore, research indicates that those who enroll in college for the first time and achieve rapid success are more prone to struggle with self-doubt(28). Robinson D, Suhr J, Buelow M. Academic self-handicapping as a mediator of the relation between imposterism and academic goal orientation: testing invariance by gender and underrepresented status. Journal of American College Health. 2024 May 9:1-8.

Many students who have imposter syndrome suffer in silence because they are afraid or ashamed to discuss their opposing ideas.(20)Many medical students report higher levels of anxiety, sadness, burnout, substance misuse, and suicidal ideation when compared to their age-matched colleagues in the general population.(29) Student self-efficacy has emerged as a key idea in educational studies within the last 40 years. Research has shown that self-efficacy is an exceptional learning variable since it influences students' motivation and learning process.(30) People with a high self-efficacy level expect to achieve more and believe they can successfully control the events in their lives. Along with specialisation and competency, it focusses on individual conceptions of what is impossible.(31)

Psychological hurdles to a successful career-development process were examined by Neureiter and TrautMattausch, who proposed that poor self-esteem and fear of both success and failure are the root causes of imposter syndrome.(21)Impostor phenomena have a negative correlation with self-efficacy. People who have low self-efficacy will start to doubt their skills and worry being judged by others. Eventually, this fear of failing in front of their peers will turn into the Impostor Phenomenon as noted by Boshuizen.(32)

Studying medical students is useful, especially during these transitional stages, since Imposter Phenomenon tends to repeat at these times. In medical school, self-doubt and low self-esteem can

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develop without guidance and encouragement, making students more likely to experience Imposter Phenomenon later in their education and career(33). Low self-esteem and positive imposter syndrome were found to be prevalent in 23.6% and 42.1% of people (n = 573), respectively, according to Ng and Tay. Positive imposter syndrome is positively correlated with low self-esteem. There are noteworthy correlations between self-esteem and mother education, gender, and grade point average (GPA). Gender has a considerable impact on the IP, according to Alsaleemet al.(34)

The motive of this study is to examine the prevalence of imposter syndrome and its association with self-esteem among physiotherapy students in Karachi, Pakistan, where no prior research has been conducted on the physiotherapy students in Karachi. Given the conflicting results in previous studies regarding variables such as different years (1st year to final year), gender, GPA, and family pressure, this research aims to clarify these discrepancies. The main purpose of this study is to reduce the incidence of imposter syndrome and improve students' self-esteem by providing resources such as therapist access and resilience training. Additionally, our study seeks to foster a supportive culture that acknowledges students' achievements, encouraging them to combat imposter syndrome and promote mental well-being. Through these efforts, we hope to contribute valuable insights and practical solutions to enhance the educational experience of physiotherapy students in Karachi.

1.1 Significance of the problem

The significance of the study is to provide insight into the prevalence of Imposter Syndrome (IS) among physiotherapy student and how it affects self-esteem. The study can help guide educational practices and mental health support programs targeted at enhancing students' well-being by determining the level of Imposter Syndrome and its relationship to student's self-worth. The results will eventually direct interventions that boost self-confidence and emotional resilience by identifying students who are at risk for academic disengagement, anxiety, and burnout. This study may help advance the field of healthcare education more broadly by creating an atmosphere that fosters the academic and professional success Methodology

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1.2 Study Design

This was a cross sectional study.

Study Population: This was a cross sectional study employed among physiotherapy undergraduates of several medical colleges in Karachi, Pakistan.

1.3 Sampling Technique

Convenience base sampling. Questionnaire will be distributed among physiotherapy students of different institutes.

1.4 Sample Size

The sample size was calculated using the WHO sample size calculator, with a margin of error set at 3% and a confidence interval of 95%. The estimated sample size was 930 and participants were selected through convenience-based sampling.

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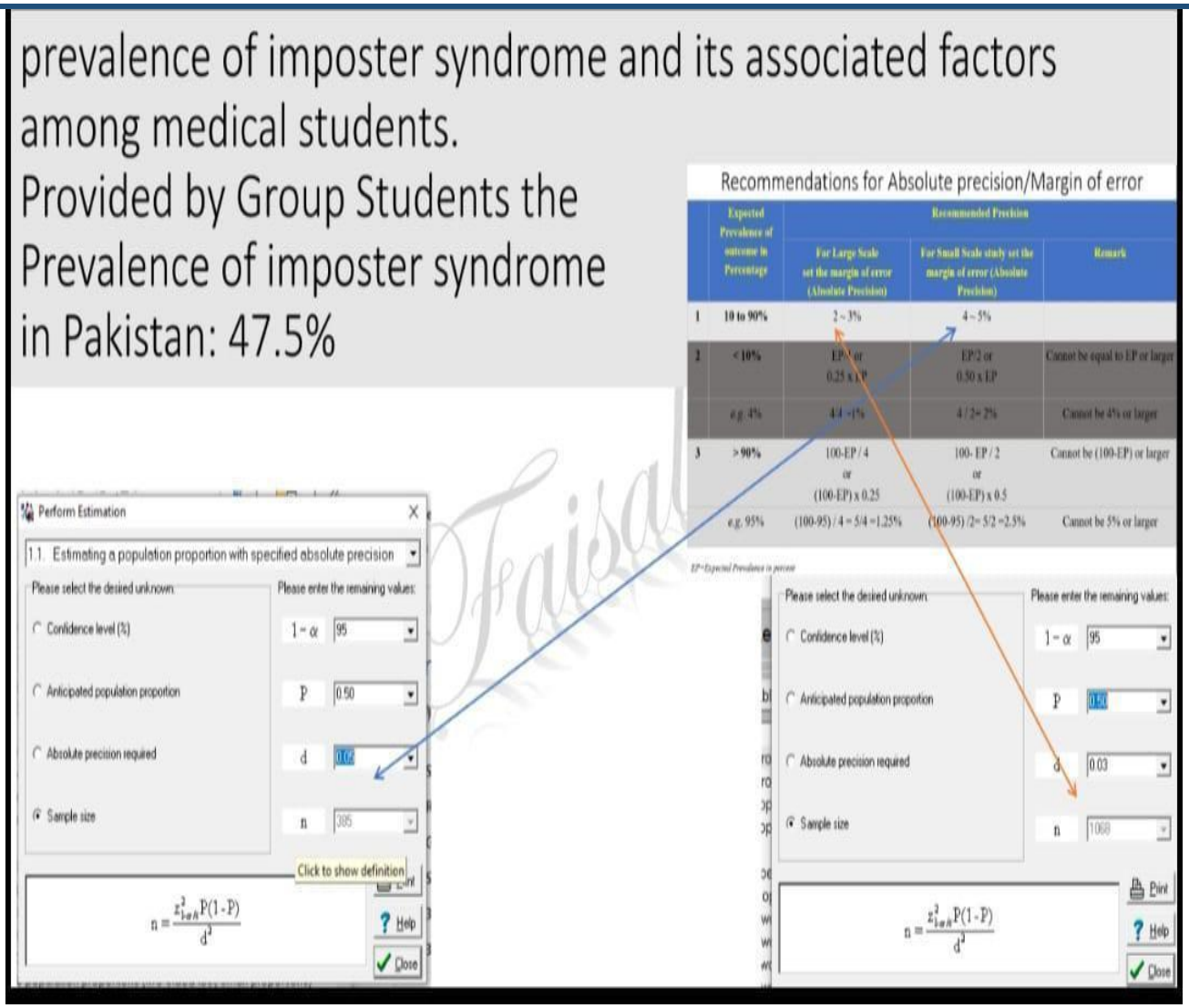

Figure: 3.1

1.5 Study Duration

6th march 2024 to 30th October 2024.

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1.6 Inclusion Criteria

From first year to final year physiotherapy students, having age between 18 to 25, and students who have given informed consent were invited to participate in this study.

1.7 Exclusion Criteria

Students who had on medications with known side effect of mood and cognitive changes, psychiatric illness and learning disability were excluded from our study.

1.8 Study Parameters

According to our study objectives, the survey was divided into three segments. The first segment included socio-demographical variable such as age, gender, academic year, GPA (grade point average), family pressure (students who had experienced comparison to their siblings or any other person by their relatives), history of taking medication with known side effect of mood and cognitive changes, history of psychiatric illness, history of learning disability. The second segment contained the CIPS (clance imposter phenomenon scale) to assess the prevalence of imposter syndrome among students. The twenty-item clance imposter phenomenon scale (CIPS-20) is considered a gold standard and validated scale to measure imposter syndrome. The CIPS-20 consist of three subscale: a) Fake b) Discount c) Luck. It contains 20 items on a 5-point scale in which 1 = strongly agree to 5 = strongly disagree. CIPS-20 uses cut-off values of less than 40, meaning the respondent has few Impostor characteristics; if the score is between 41 and 60, the respondent has moderate IP experiences; a score between 61 and 80 means the respondent frequently has Impostor feelings; and a score higher than 80 means the respondent often has intense IP experiences. It demonstrates good internal consistency with Cronbach alphas ranging from 0.85 to 0.96. The third segment involves Rosenberg Self-Esteem Scale (RSE), to assess the self esteem among students. As the RSE is a Guttman scale, scoring can be a little complicated. Scoring involves a method of combined ratings. Low self-esteem responses are “disagree” or “strongly disagree” on items 1, 3, 4, 7, 10, and “strongly agree” or “agree”

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on items 2, 5, 6, 8, 9. The scale ranges from 0-30. Scores between 15 and 25 are within normal range; scores below 15 suggest low self-esteem. It indicates excellent internal consistency of 0.92 and test-retest reliability of 0.85 and 0.88.

1.9 Ethical Considerations

Ethical considerations for this study included maintaining participant confidentiality, voluntary participation, and obtaining informed consent. The study was approved by the institutional ethical committee. Informed consent was obtained from all participants prior to the distribution of the survey. Participation was completely voluntary, and participants were allowed to withdraw from the study at any time. Strict confidentiality was maintained in handling all collected information.

1.10 Data Collection Procedure

The data was collected from different hospitals from Karachi including; liaquat national school of physiotherapy (LNSOP), Jinnah postgraduate and medical college (JPMC), Karachi university (KU), Ziauddin university, South city hospital, Indus hospital and other medical colleges.

1.11 Data Analysis Procedure

All data was analyzed using the IBM SPSS version 26.0. Descriptive statistics including means, percentages, ranges and standard deviation were conducted to describe data regarding Imposter syndrome and demographic characteristics of the participants. Pearson's chi-square test was used to determine the association between imposter syndrome with self esteem and sociodemographic variables. Statistical significance was set at a P value less than 0.55.

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Table: 3.1 (METHODOLOGY)

TOPIC: PREVALANCE OF IMPOSTER SYNDROME AND ITS ASSOCIATION WITH SELF-ESTEEM AMONG PHYSIOTHERAPY STUDENTS IN KARACHI, PAKISTAN.

INCLUSION CRITERIA:

1ST year to 5th year undergraduate physiotherapy students

Age 18 to 25 years

EXCLUSION CRITERIA:

Students on medications with known side effect of mood and cognitive changes

Students with psychiatric illness and learning disability

Targeted sample size: 1068

Online responses 270

Responses in hard copy 660

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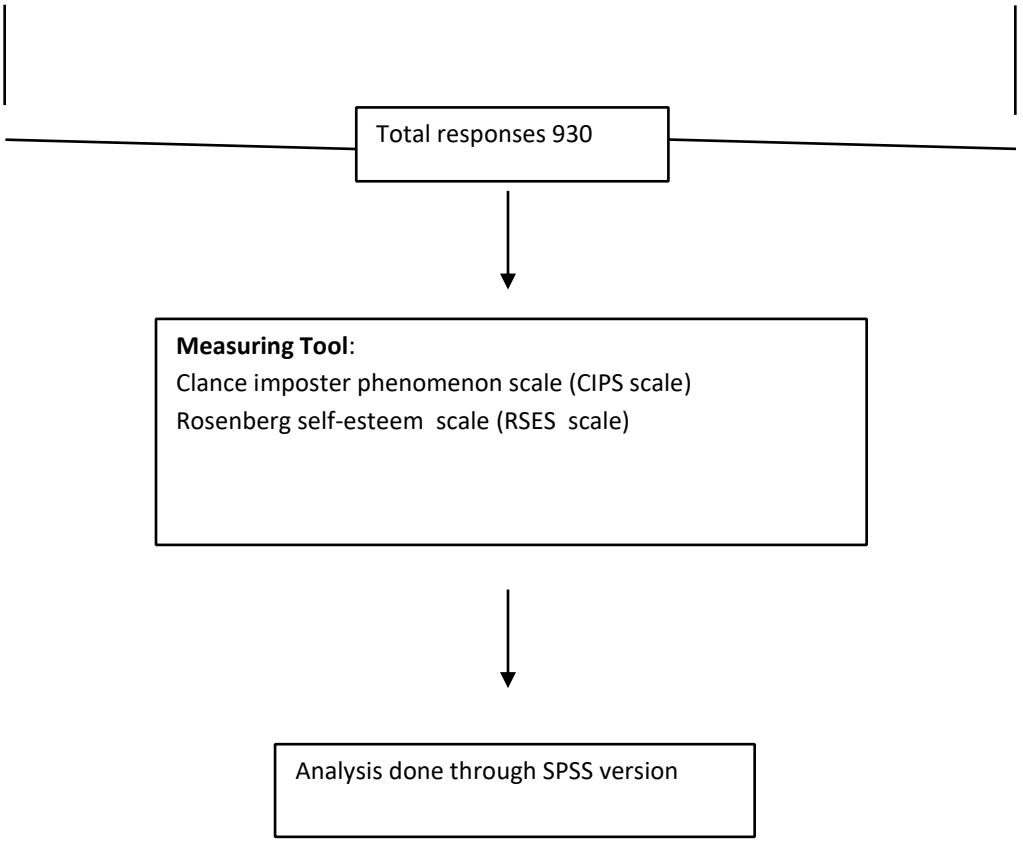

4. Result

4.1 Demographic characteristics of the participants

A total of 930 undergraduate physiotherapy students took part in the survey with the number of females at 77.2% while the number of males was at a lower percentage of 22.8%. The age group above 20 years had most of the students who took the survey at 69.4%. Among the students, the largest percentage recorded in terms of academic year was 23.1% students in the third year of study. The level of achievement in terms of academic performance revealed that the GPA range between 3.0-3.3 was at 41.3%. Of those that participated in the survey, the number reporting a GPA of 3.4-3.7 was 39.0%, this would mean a high rate of academic achievement in general. Additionally, 32.9% of students answered that their family did not influenced them, which has a trickledown effect on

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self-esteem and even to the imposter syndrome. This demographic profile aids in the analysis of relationships between these factors as illustrated in Table 1.

Table 4.1 Sociodemographic characteristics

Variable	Category	Frequency	Valid Percent
Gender	Male	212	22.8
	Female	718	77.2
Age Group	≤20 years	285	30.6
	>20 years	645	69.4
Academic Year	1st year	154	16.6
	2nd year	183	19.7
	3rd year	215	23.1
	4th year	209	22.5
	5th year	169	18.2
GPA	<2.9	90	9.7
	3.0-3.3	384	41.3
	3.4-3.7	363	39.0
	3.8-4.0	93	10.0
Family Pressure	No	306	32.9
	Yes	624	67.1

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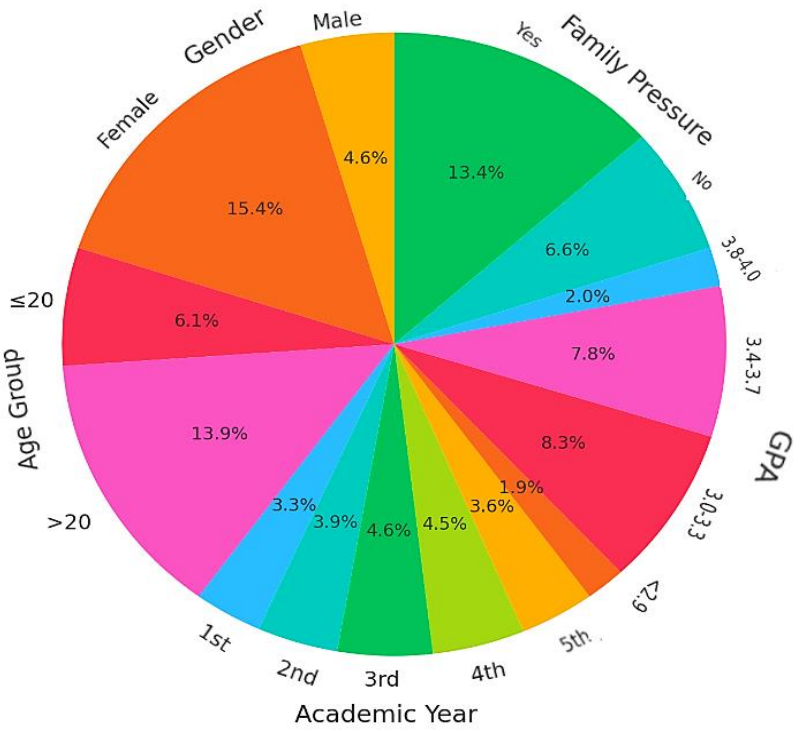

Figure 4.1 Pictorial Representation of Sociodemographic characteristics of the participants

4.2 Prevalence of Imposter Syndrome

Statistical analysis has found that many experiences of impostor syndrome demonstrate relationships with different demographic characteristics.

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Table 4.2 Association between Impostor Syndrome and Demographic characteristics

Variable	Category	Mild IP Experience (<=40)	Moderate IP Experience (41-60)	Frequent IP Experience (61-80)	Total	Pearson Chi-Square	p-value
Gender	Male	20 (21.7%)	142 (28.1%)	47 (18.0%)	209	25.348	0.000
	Female	72 (78.3%)	364 (71.9%)	214 (82.0%)	650		
Age Group	<= 20 years	18 (19.6%)	144 (28.5%)	0 (0%)	162	16.636	0.001
	> 20 years	74 (80.4%)	362 (71.5%)	0 (0%)	436		
Academic Year	1st year	9 (9.8%)	80 (15.8%)	0 (0%)	89	24.891	0.015
	2nd year	12 (13.0%)	99 (19.6%)	0 (0%)	111		
	3rd year	21 (22.8%)	126 (24.9%)	0 (0%)	147		
	4th year	23 (25.0%)	108 (21.3%)	0 (0%)	131		
	5th year	27 (29.3%)	93 (18.4%)	0 (0%)	120		
GPA	< 2.9	2 (2.2%)	40 (7.9%)	32 (12.3%)	74	30.684	0.000
	3.0-3.3	40 (43.5%)	201 (39.7%)	116 (44.4%)	357		
	3.4-3.7	38 (41.3%)	218 (43.1%)	88 (33.7%)	344		
	3.8-4.0	12 (13.0%)	47 (9.3%)	25 (9.6%)	84		
Family Pressure	No	27 (29.3%)	132 (26.1%)	0 (0%)	159	52.893	0.000
	Yes	65 (70.7%)	374 (73.9%)	0 (0%)	439		

4.3 Correlation between gender and IP: The correlation between gender and IP is very evident with females reporting a more substantial proportion of moderate 71.9% and frequent 82.0% IP

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experiences as compared to males. Pearson Chi-Square value of 25.348, p = 0.000, indicates that females are more susceptible to imposter syndrome.

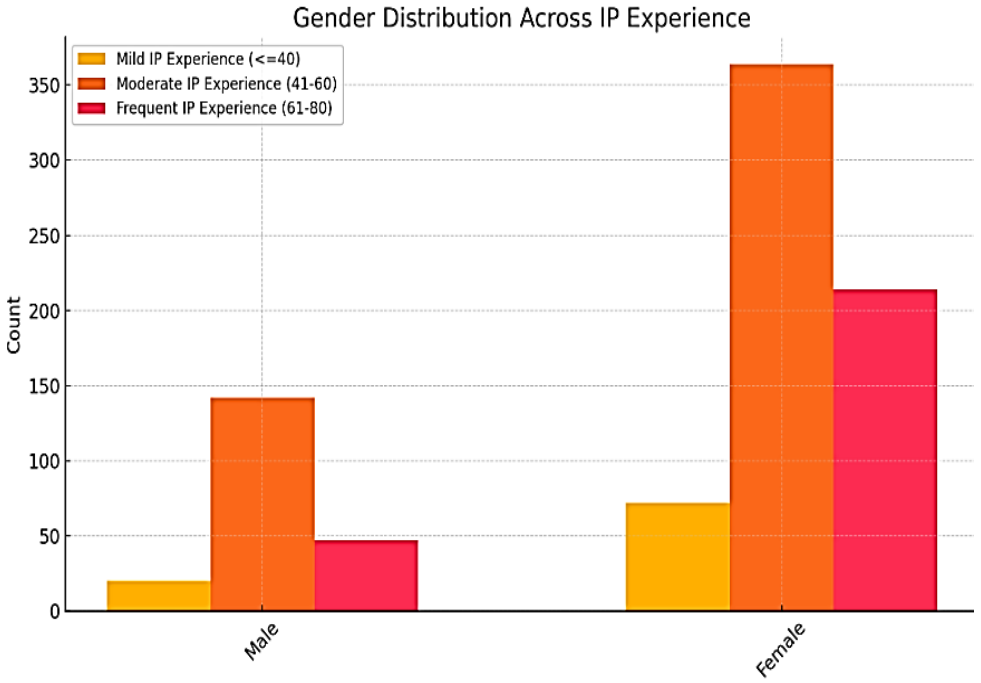

Figure 4.2 Correlation between gender and IP

4.4 Correlation between Age and IP: Age was also another factor; results demonstrate that older than 20 years had more frequent ones, 80.4% being mild and 71.5% were moderate, while those participants ≤20years had no frequency at all experiences supported by a Chi-Square value of 16.636 p = 0.001.

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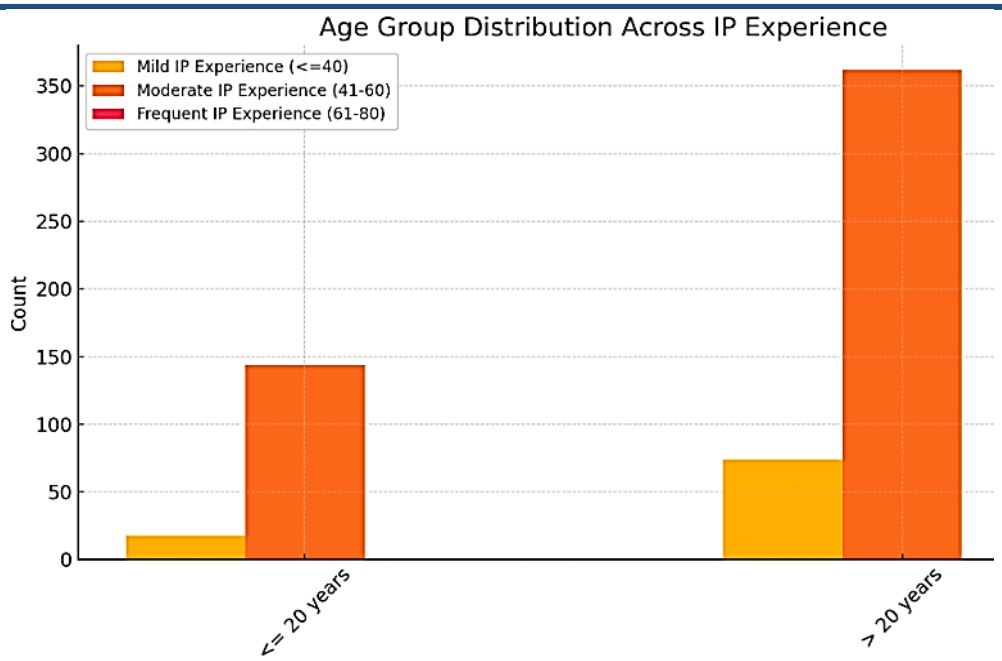

Figure 4.3Correlation between Age and IP

4.5 Correlation between Academic year and IP: Academic year also influences the IP experience: First-year students have the lowest at far 9.8% mild, no moderate or frequent, while the highest was reported by the fifth year students for mild IP experiences at 29.3% with fewer moderate experiences reported at 18.4%. It had a p-value of 0.015; hence it is already significant with Chi-Square value of 24.891.

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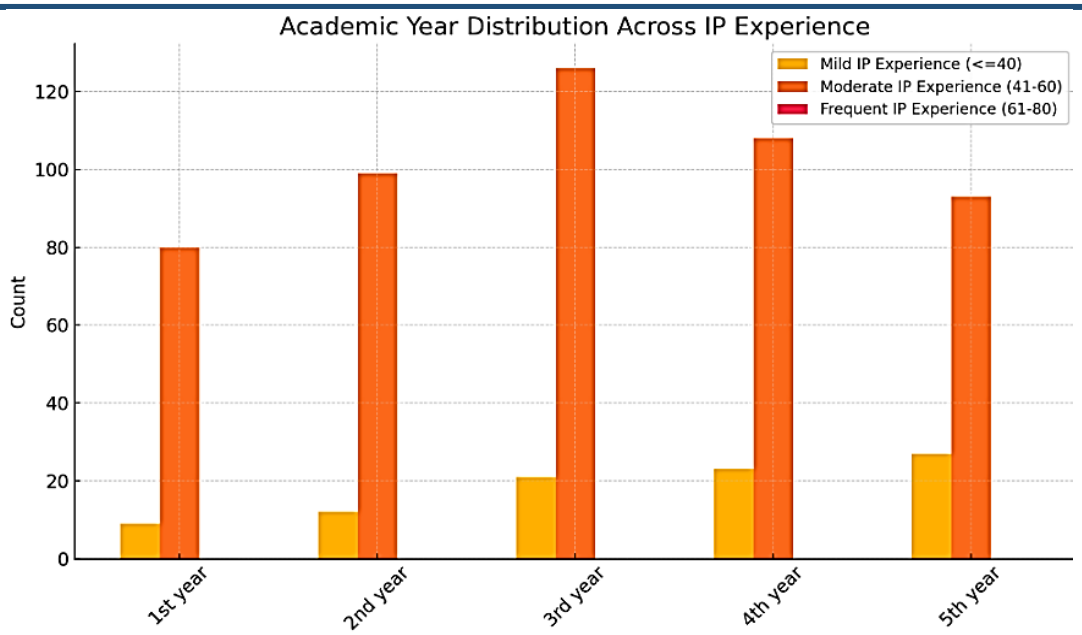

Figure 4.4 Correlation between academic year and IP

4.6 Correlation between GPA and IP: GPA is also associated with IP, where students having low GPAs of <2.9 have fewer mild experiences that amount to only 2.2% but display a rise in the direction of frequent experiences that reach 12.3%, and GPAs that are ranged between 3.0-3.3 show higher mild (43.5%) and frequent (44.4%) experiences. Chi-Square value 30.684 ($p = 0.000$) establishes that this relationship is significant.

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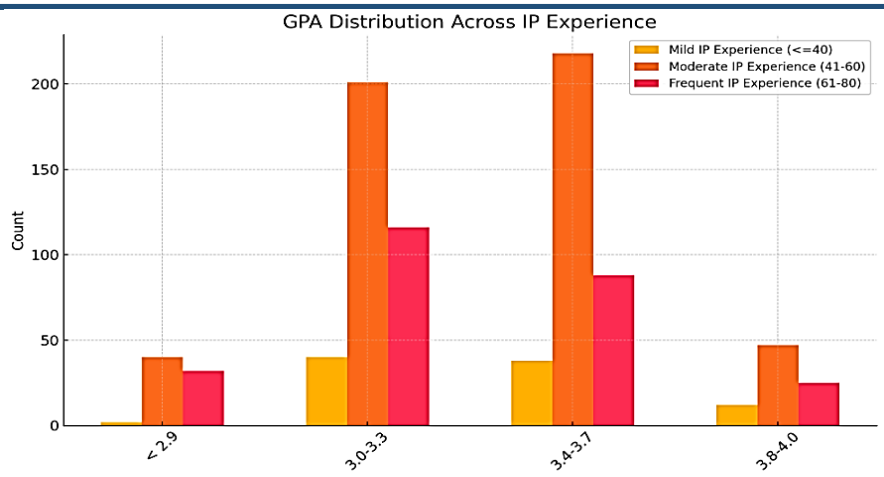

Figure 4.5 Correlation between GPA and IP

4.7 Correlation between family pressure and IP: Family pressure is also seen to influence IP experiences considerably, with those not pressured by family members having 29.3% of mild experiences against 70.7% for those with pressure. The Pearson Chi-Square value is at 52.893(p = 0.000), indicating that students with family pressure experience more this phenomenon of impostor syndrome.

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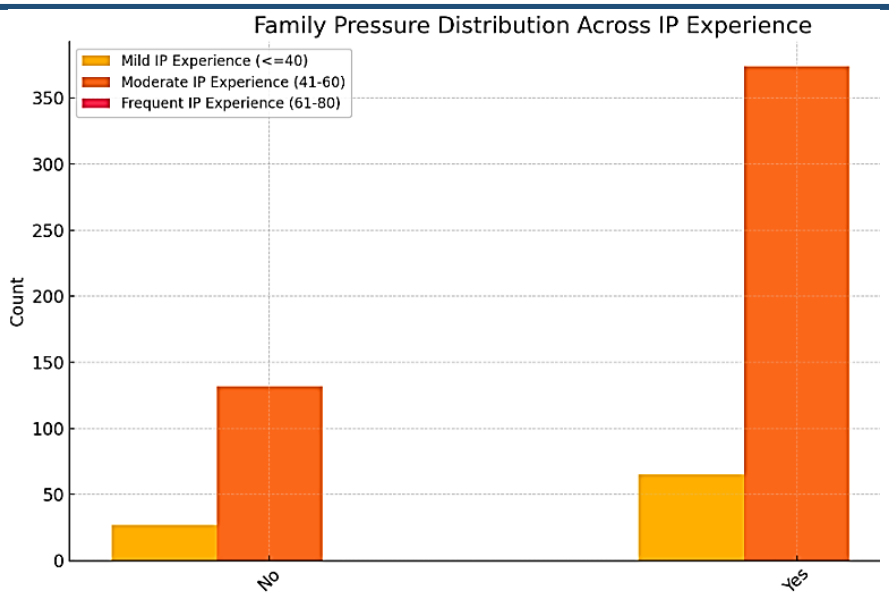

Figure 4.6Correlation between family pressure and IP

4.8: Association of Self Esteem and Impostor Syndrome among Undergraduate Physiotherapy Students in Karachi:

The present data analyze the association of Imposter Syndrome with Self Esteem among Undergraduate Physiotherapy Students in Karachi and conducts a Chi-Square test for statistical analysis. The sample has been divided into two groups based on self-esteem level: low self-esteem (scores < 15) and high self-esteem (scores ≥ 15). In the case of low self-esteem, it was evident that only 4 (4.3%) reported slight feelings of impostor syndrome, while 83 (16.4%) had moderate levels. For the high self-esteem category, however, the case was substantially different-a majority, 88 (95.7%), reported they had experienced mild feelings of impostor syndrome, with 423 (83.6%) reporting experiencing moderate levels of such feelings.

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Table 4.3 Association of Imposter Syndrome on Self-Esteem among Undergraduate Physiotherapy Students in Karachi

Self Esteem	Mild IP Experience (<=40)	Moderate IP Experience (41-60)	Total
Low Self-esteem (<15)	4 (4.3%)	83 (16.4%)	87
High Self-esteem (>=15)	88 (95.7%)	423 (83.6%)	511

The statistical analysis revealed a significant negative association of self-esteem variables with impostor syndrome, with a Pearson Chi-Square value of 105.233 and asymptotic significance p-value of 0.000. This relationship is statistically significant since the p-value has a value of 0.000, further supported by a likelihood ratio of 93.820, again yielding a p-value of 0.000. Evidence in the study shows a non-significant but higher likelihood of the manifestation of experiences within the mild and moderate categories for respondents with low self-esteem, versus those having more elevated levels of self-esteem. Thus, findings underpin the role of self-esteem in the expression of feelings of impostor syndrome, and suggest the enhancement of self-esteem as one of the important ways of reducing such feelings. Interventions that may assist in building self-esteem could potentially reduce the prevalence of impostor syndrome, especially in individuals with lower rates of self-esteem.

Table 4.4 Chi-Square Test for Self Esteem and Impostor Syndrome

Test	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	105.233a	3	0.000
Likelihood Ratio	93.820	3	0.000
N of Valid Cases	930		

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Discussion

Findings from this study among the undergraduate physiotherapy students of Karachi, Pakistan reveal the key demographic influencers of IP, showing the complex interplay in gender, age, and academic year and GPA along with self-esteem. Notably, this study brings out family pressure as a new variable to the literature which has not been studied at depth regarding impostor syndrome, hence adding a new dimension to the literature already existing.

1.12 Comparison with existing Research

There was a significant gender gap in the survey in that females had significantly a higher percentage of moderate and frequent experience of impostor syndrome as compared to males. The study is supported by previous literature (39-42) suggesting the challenges women underwent were compounded by feelings of inadequacy mostly within competitive academic settings.

Old age-related results indicate that students with ages over 20 years, experience high levels of impostor syndrome. This could be interpreted to mean that as a student advances with their studies, pressures and expectations attached increase and lead to heightened feelings of inadequacy. According to academic year, the results indicated that first-year students were at their lowest levels, which might represent their adaptation to higher education demands. In contrast, fifth-year students claimed a greater proportion of experiences of mild impostors, suggesting that maybe while such feelings persist, coping strategies may develop with the passage of time.

Results also indicated that impostor syndrome experiences are closely related to academic performance, as presented by the students' GPA. The students with relatively lower GPA values of 3.0-3.3 reported a smaller number of mild episodes but a higher impostor feeling frequency. Instead, those whose GPAs were between 3.0-3.3 reported greater numbers for both mild and frequent episodes and demonstrated the performance-related nature of their self-perception. This is consistent with (13, 24).

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Introducing family pressure as a new variable in the analysis opens up ways for understanding its contribution to the students' experiences in relation to impostor syndrome. It was interesting to see that students with familial expectations had more perceived levels of impostor syndrome compared to their counterparts. This novel finding pointed toward reality: family might be involved in issues about a person's self-concept and being inadequate, and therefore, support from the family is a protective factor against impostor syndrome. This therefore adds a purpose of the literature contribution: there is a need to delve deeper into understanding the family influences affecting academic experiences as well as self-esteem.

Lastly, the analysis of self-esteem correlated the relationship between self-esteem and impostor syndrome. Students who had lower levels of self-esteem reported high impostor experiences, with most students having low self-esteem reporting moderate impostor experiences; whereas only mild experiences were reported by most students who had high self-esteem. This suggests a strong negative correlation and interventions that aim to enhance self-esteem may thus be crucial and effective in possibly removing the feelings of impostor syndrome from low-self-esteem students. This might be attributed to the reason that people of high self-esteem attribute their success to their internal strengths like skills, intelligence, and competency. These findings corroborate earlier works (43-49). However, our findings does not support the findings of other studies who reported that there was no significant relationship between self-esteem and impostor syndrome (50, 51).

1.13 Limitations

Karachi and Pakistani culture may restrict the findings' generalizability to other settings or areas. Imposter syndrome can be experienced and reported differently depending on one's culture. Because the study is a snapshot in time, changes in academic stress or personal situations over time may cause oscillations in impostor syndrome and self-esteem. Ignoring a population segment that might shed light on the ways in which mental health disorders and learning difficulties interact with imposter syndrome could result in the exclusion of students with these conditions. The findings may not be

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as broadly applicable to other medical or healthcare fields, even though concentrating on physiotherapy students is advantageous for focused insights.

1.14 Strength of the Study

There are a few strengths to this study in relation to the prevalence of imposter syndrome and its association with self-esteem among undergraduate physiotherapy students in Karachi, Pakistan. The study targets a certain population, and in the process, imposter syndrome is explored within the specific context of physiotherapy education. Such targeted input may be useful for planning specific interventions aimed at dealing with these challenges specifically for the students. Also, the study adds to the existing literature since it will shed light on the relation between imposter syndrome and self-esteem. The relationship is still less researched within the Pakistani educational landscape. Furthermore, use of validated questionnaires while collecting the data strengthens the study for it allows quantifiable data to be collected that would then be allowed to go through rigorous statistical analysis so that possible significant correlations may exist among the variables of investigation. In addition, the study results point to a very critical mental health concern and raise awareness in schools to start developing resources that will help students in dealing with such issues.

1.15 Weakness of the Study

However, the study also reveals a few weaknesses that will inevitably affect the interpretation of the findings. First, results here have little generalizability power due to the kind of convenience sample used, which may not well represent other student populations or educational contexts. Therefore, the findings cannot very widely apply. A second limitation is that, given it is a cross-sectional study, casual relationships cannot be established; therefore, it is not known if imposter syndrome directly relates to someone's self-esteem or which way the relationship flows. Another limitation of the measures being self-reported is that there may exist possible response bias, and where self-reported measures exist, participants may down-report feelings of inadequacy or over report self-esteem for

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social desirability reasons. Lastly, since there is no longitudinal data, the study cannot see how imposter syndrome and self-esteem develop over time, which might be very meaningful for the development of those constructs in the educational trajectory.

Conclusion and Recommendations

In conclusion, the present study represents a meaningful step forward in the knowledge base pertinent to impostor syndrome among undergraduate physiotherapy students who face novel influential factors, such as familial pressure. Critical findings from this study shed light on the powerful influence of support and expectations from families in regard to students' self-perception and overall psychological well-being. We should also highlight the self-esteem mediating effect here, showing how pressure from family affects the students' self-esteem and then leads them to experience feelings of being an 'impostor'. Family dynamics and self-esteem therefore come to impact the discussion about impostor syndrome by underscoring the need for balanced treatments in mental health problems along the academic pathway.

This work further encourages further research to scrutinize target interventions, that aim at evoking encouraging family milieus and also develop self-esteem levels so as to nullify those feelings of inadequacy and improve confidence and success among students during their academic pursuits.

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