

The Relationship Between Imposter Syndrome, Trapezius Myalgia and Perceived Stress in Clinical Education Rotations

Mehwish Abbas¹, Aqsa Majeed¹, Laiba Qamar¹, Quratulain Amir Rashid¹, Ashraib Rathore¹

¹ University of Lahore, Lahore, Pakistan

* Correspondence: Aqsa Majeed, aqsa.majeed@uip.edu.pk



ABSTRACT

Background: The transition from preclinical education to clinical rotations is a demanding phase for healthcare students and is often accompanied by psychological pressure, performance anxiety, and increased physical strain. During this period, many students experience impostor syndrome, a psychological phenomenon characterized by persistent self-doubt despite objective competence. Chronic stress related to these perceptions may also contribute to musculoskeletal discomfort, particularly trapezius myalgia and neck disability. However, limited research has explored the combined relationship between impostor syndrome, perceived stress, and neck disability among physiotherapy students during clinical training. **Objective:** To determine the prevalence of impostor syndrome, neck disability, and perceived stress among physiotherapy students and to examine the relationship between these variables during clinical education rotations. **Methods:** A cross-sectional study was conducted among 196 undergraduate physiotherapy students at the University of Lahore using non-probability convenience sampling. Impostor syndrome was assessed using the Clance Impostor Phenomenon Scale (CIPS), neck disability was evaluated using the Neck Disability Index (NDI), and perceived stress was measured with the Perceived Stress Scale (PSS). Descriptive statistics summarized demographic characteristics and scale distributions, while Chi-square tests were used to evaluate associations between variables with statistical significance set at $p < 0.05$. **Results:** Among the participants (mean age 21.48 ± 1.39 years; 57.7% female), 38.3% exhibited mild, 43.4% moderate, 15.8% frequent, and 2.6% intense impostor characteristics. Neck disability assessment showed 21.4% had no disability, 37.2% mild disability, and 41.3% moderate disability. Perceived stress levels were categorized as low in 40.3%, moderate in 48.5%, and high in 11.2% of students. Significant associations were found between impostor syndrome and neck disability ($p < 0.001$) as well as perceived stress ($p < 0.01$). Additionally, impostor characteristics were significantly associated with gender ($p = 0.033$) and academic semester ($p = 0.01$). **Conclusion:** Impostor syndrome, neck disability, and perceived stress are highly prevalent among physiotherapy students during clinical rotations. Stronger impostor feelings are significantly associated with higher levels of perceived stress and greater neck disability, highlighting the importance of integrating psychological support and ergonomic interventions within clinical education programs to enhance student wellbeing and professional development.

Keywords: Impostor syndrome, neck disability, perceived stress, physiotherapy students, clinical education, trapezius myalgia.

INTRODUCTION

The transition from classroom-based learning to real-world clinical practice represents a pivotal stage in the education of healthcare professionals. For physiotherapy students, clinical education rotations provide an essential opportunity to translate theoretical knowledge into practical skills while interacting with patients and multidisciplinary healthcare teams. Although this transition is intellectually stimulating and professionally rewarding, it is also accompanied by increased academic demands, clinical responsibility, and constant performance evaluation. These pressures may contribute to heightened psychological stress and self-doubt among students who are still developing their professional identity. As a result, many students encounter psychological challenges that

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may influence both their mental well-being and their physical health during this formative period of training (1).

One psychological phenomenon that has gained increasing attention in academic and professional settings is Impostor Syndrome (IS). First described by psychologists Pauline Clance and Suzanne Imes in 1978, impostor syndrome refers to a persistent internal experience in which individuals doubt their abilities and fear being exposed as intellectual frauds despite objective evidence of competence and achievement (2). Individuals experiencing impostor feelings tend to attribute their accomplishments to external factors such as luck, timing, or excessive effort rather than their own abilities. In competitive academic environments, such as health professional education programs, these cognitive distortions may become particularly pronounced due to frequent evaluations, hierarchical learning structures, and high expectations for clinical performance (3). Systematic reviews have reported that impostor syndrome is prevalent among healthcare students and professionals, often contributing to reduced self-efficacy, increased anxiety, and professional burnout (4).

In physiotherapy education, students face unique challenges during clinical rotations that may intensify impostor feelings. Unlike classroom settings, clinical environments require students to apply knowledge in real-time patient care situations while being observed by supervisors and peers. The complexity of patient conditions, fear of making mistakes, and comparison with more experienced clinicians can foster a perception of inadequacy among students who are still developing clinical competence. Research suggests that these perceptions may be further amplified by the “curse of knowledge,” in which students become increasingly aware of the vast amount of medical knowledge they have yet to master, interpreting this awareness as personal incompetence rather than a natural stage in professional learning (5).

Psychological stress associated with impostor feelings may also manifest through physiological responses. Stress activates neuroendocrine pathways, including the sympathetic-adreno-medullary (SAM) system and the hypothalamic–pituitary–adrenal (HPA) axis, resulting in the release of catecholamines and cortisol that prepare the body for perceived threats (6). Prolonged activation of these stress responses can produce sustained muscle tension, particularly in postural muscles that maintain static body positions during clinical tasks. Among these muscles, the upper trapezius plays a critical role in supporting head posture and stabilizing the shoulder girdle during prolonged activities such as patient examination, documentation, and manual therapy procedures. Evidence suggests that individuals experiencing psychological stress often demonstrate increased electromyographic activity in the trapezius muscle, even during resting conditions, indicating persistent muscle activation associated with stress-related tension (7).

Sustained muscle tension in the trapezius region may contribute to trapezius myalgia, a musculoskeletal condition characterized by pain, stiffness, and functional limitations in the neck and shoulder region. In clinical and educational settings where students frequently adopt static postures, such musculoskeletal symptoms may become increasingly prevalent. The Neck Disability Index (NDI) is commonly used to evaluate functional limitations related to neck pain and has been widely applied in studies investigating musculoskeletal disorders among healthcare trainees. Previous research has demonstrated a high prevalence of neck pain among physiotherapy students, suggesting that both physical workload and psychosocial stressors may contribute to the development of musculoskeletal discomfort in this population (8).

Perceived stress represents another important factor influencing both psychological and physical health among students in demanding academic environments. The Perceived Stress Scale (PSS) is widely used to assess the extent to which individuals perceive their life situations as stressful. Elevated perceived stress has been associated with decreased academic performance, emotional exhaustion, and impaired coping mechanisms among healthcare students. Studies conducted among physiotherapy undergraduates have reported substantial levels of moderate to high perceived stress, highlighting the need to better understand the factors contributing to psychological strain during professional training (9). Moreover, emerging evidence suggests that psychological stress and musculoskeletal pain may be interrelated through bidirectional pathways in which stress exacerbates muscle tension and pain, while persistent pain further increases psychological distress.

Despite the growing body of literature examining impostor syndrome, stress, and musculoskeletal symptoms independently, limited research has explored the interrelationship between these variables among physiotherapy students during clinical education rotations. Most existing studies have focused on medical students or practicing healthcare professionals, leaving a notable gap in understanding how impostor feelings may interact with perceived stress and neck-related disability among physiotherapy trainees specifically. Given the physically demanding and psychologically challenging nature of physiotherapy education, investigating these relationships may provide valuable insights into the multifactorial factors affecting student well-being during clinical training.

Understanding the association between impostor syndrome, perceived stress, and neck-related disability among physiotherapy students is important for several reasons. First, early identification of psychological and physical stressors may allow educators and institutions to implement targeted interventions aimed at improving student resilience and well-being. Second, addressing both psychological and ergonomic factors may help reduce the risk of long-term musculoskeletal disorders and professional burnout among future healthcare practitioners. Finally, improved awareness of these challenges may support the development of educational environments that foster confidence, supportive mentorship, and healthy coping strategies during clinical training.

Therefore, the present study aimed to determine the prevalence of impostor syndrome, neck-related disability associated with trapezius myalgia, and perceived stress among undergraduate physiotherapy students during clinical education rotations. In addition, the study sought to investigate the association between impostor syndrome and both neck disability and perceived stress within this population. It was hypothesized that higher levels of impostor characteristics would be significantly associated with greater levels of perceived stress and increased neck-related disability among physiotherapy students undergoing clinical training.

METHODS

A cross-sectional observational study was conducted to investigate the prevalence of impostor syndrome, neck-related disability associated with trapezius myalgia, and perceived stress among undergraduate physiotherapy students during clinical education rotations. The cross-sectional design was selected because it allows simultaneous assessment of psychological and physical health variables within a defined population at a single point in time and is commonly employed to evaluate associations between psychosocial and musculoskeletal outcomes in healthcare students (18). The study was carried out at the University of Lahore, Pakistan, where undergraduate Doctor of Physical Therapy students undertake structured clinical rotations in affiliated teaching hospitals. These clinical

placements typically involve supervised patient care activities alongside academic coursework, providing a relevant context for examining psychological stress and musculoskeletal symptoms during professional training.

The study population consisted of undergraduate physiotherapy students enrolled in the clinical phase of the Doctor of Physical Therapy program. Participants were eligible if they were between 20 and 25 years of age, were currently enrolled in the physiotherapy program, had completed at least one clinical education rotation, and were studying in the fifth semester or above, ensuring that participants had adequate exposure to clinical training environments. Both male and female students were included. Individuals were excluded if they declined participation, reported regular participation in structured fitness or gym training programs that could influence musculoskeletal outcomes, had sustained any traumatic musculoskeletal injury within the previous three months, had a diagnosed psychiatric disorder under active treatment, reported substance abuse, or were pregnant or in the postpartum period. These criteria were applied to minimize potential confounding factors that could independently influence perceived stress levels or musculoskeletal pain. Participants were selected using a non-probability convenience sampling approach, which is frequently used in educational and behavioral research where the target population is accessible within institutional settings (19).

Eligible students were approached during scheduled academic sessions and clinical rotation briefings and were provided with information regarding the purpose and procedures of the study. Students who agreed to participate were invited to complete a structured questionnaire packet after providing written informed consent. Participation was voluntary and anonymous, and no academic incentives were provided. To minimize response bias, students completed the questionnaires independently without direct supervision from faculty members involved in their academic assessment. Data collection was conducted using standardized self-administered instruments that have been widely validated for assessing psychological and musculoskeletal outcomes among student populations.

Data collection included demographic information and three validated assessment instruments measuring the primary study variables. Demographic data included age, gender, academic semester, body height, body weight, weekly hours spent in clinical rotations, and average weekly study hours outside of clinical placements. Impostor syndrome was assessed using the Clance Impostor Phenomenon Scale (CIPS), a widely used 20-item instrument designed to measure the intensity of impostor feelings. Each item is rated on a five-point Likert scale ranging from 1 (not at all true) to 5 (very true), producing a total score between 20 and 100. Based on established scoring criteria, scores between 40 and 60 indicate mild impostor characteristics, scores between 61 and 80 indicate moderate impostor characteristics, scores between 81 and 100 indicate frequent impostor experiences, and scores exceeding 100 indicate intense impostor feelings. The CIPS has demonstrated strong internal consistency and construct validity across diverse academic populations (20).

Neck-related disability associated with trapezius myalgia was assessed using the Neck Disability Index (NDI), a validated questionnaire designed to evaluate functional limitations related to neck pain. The NDI consists of ten items assessing pain intensity, personal care, lifting, reading, headaches, concentration, work, driving, sleeping, and recreational activities. Each item is scored from 0 to 5, producing a maximum score of 50. Scores were categorized according to standard interpretation guidelines, with 0–4 representing no disability, 5–14 indicating mild disability, 15–24 representing moderate disability, 25–34 indicating severe disability, and scores above 34 representing complete disability (21). The NDI is widely used

in clinical and research settings and demonstrates high reliability and validity in evaluating functional impairment related to neck pain.

Perceived psychological stress was measured using the Perceived Stress Scale (PSS-10), a ten-item instrument designed to assess the extent to which individuals perceive situations in their lives as stressful. Each item is rated on a five-point Likert scale ranging from 0 (never) to 4 (very often), producing a total score ranging from 0 to 40. Scores between 0 and 13 indicate low perceived stress, scores between 14 and 26 indicate moderate perceived stress, and scores between 27 and 40 indicate high perceived stress. The PSS has been extensively validated across diverse populations and is considered a reliable measure of subjective stress perception in academic and healthcare settings (22).

The primary variables examined in the study included the level of impostor syndrome measured by CIPS scores, neck-related disability measured by NDI scores, and perceived stress measured by PSS scores. Demographic variables including gender, age, academic semester, and clinical training hours were considered potential explanatory variables that could influence psychological or musculoskeletal outcomes. Operational definitions were applied to categorize participants into standardized groups based on the established scoring thresholds of each measurement tool. These categorizations enabled the analysis of prevalence distributions and statistical associations between psychological and musculoskeletal variables.

Several methodological steps were implemented to reduce potential sources of bias and enhance data validity. Standardized validated instruments were used to ensure reliable measurement of psychological and physical health outcomes. Questionnaires were self-administered anonymously to reduce social desirability bias and encourage honest responses. Eligibility criteria excluded participants with recent traumatic injuries, psychiatric treatment, or confounding physical activities that could independently influence neck pain or stress levels. Consistent data collection procedures were followed for all participants to maintain uniformity in measurement conditions. Data entry was performed using double-check verification procedures to minimize transcription errors and ensure data integrity.

The sample size was determined based on feasibility considerations within the accessible student population during the study period, resulting in a total sample of 196 participants. This sample size provided adequate representation of physiotherapy students across multiple academic semesters and clinical training environments, allowing for meaningful estimation of prevalence rates and statistical associations between the study variables.

All collected data were entered and analyzed using Statistical Package for Social Sciences (SPSS) version 26. Descriptive statistics were used to summarize demographic characteristics and the distribution of study variables. Continuous variables such as age, height, weight, and weekly clinical hours were reported as means with standard deviations, while categorical variables such as gender, academic semester, and categorical scores from CIPS, NDI, and PSS were presented using frequencies and percentages. Histograms and bar charts were generated to visually represent variable distributions. Associations between impostor syndrome and other categorical variables, including neck disability and perceived stress, were evaluated using the Chi-square test of independence. Statistical significance was determined using a two-tailed p-value threshold of less than 0.05. Data were screened for completeness prior to analysis, and questionnaires with substantial missing responses were excluded to maintain analytical accuracy.

Ethical approval for the study was obtained from the Institutional Review Board of the University of Lahore prior to data collection. The study was conducted in accordance with

the ethical principles outlined in the Declaration of Helsinki for research involving human participants. All participants provided written informed consent before completing the questionnaires, and confidentiality of personal information was strictly maintained. Data were anonymized and stored securely to ensure participant privacy and research transparency. The use of standardized measurement tools, clearly defined eligibility criteria, and reproducible statistical procedures was intended to facilitate transparency and allow replication of the study methodology in similar academic and clinical education settings.

RESULTS

A total of 196 undergraduate physical therapy students were included in the study. The mean age of the participants was 21.48 ± 1.39 years. The average body height was 164.08 ± 7.47 cm, while the mean body weight was 65.21 ± 6.85 kg. In terms of academic workload, students reported spending an average of 15.90 ± 3.44 hours per week in clinical rotations and 15.09 ± 3.03 hours per week studying outside rotations.

Regarding categorical demographics, 113 participants (57.7%) were female and 83 (42.3%) were male. Students from different academic semesters were represented, with the highest proportion from the 7th semester (59 students, 30.1%), followed by the 9th semester (41, 20.9%), 8th semester (39, 19.9%), and 10th semester (30, 15.3%). Smaller proportions were enrolled in the 5th semester (17, 8.7%) and 6th semester (10, 5.1%). Clinical placements were distributed across several hospitals, with the largest proportion attending University of Lahore Teaching Hospital (72 students, 36.7%), followed by Sehat Medical Complex, Hanjarwal (49, 25.0%) and Sir Ganga Ram Hospital (42, 21.4%). Fewer students were placed at Social Security Hospital (22, 11.2%), Mansoorah Hospital (6, 3.1%), and Sehat Medical Complex, Lake City (5, 2.6%).

With respect to impostor syndrome, the Clance Impostor Phenomenon Scale showed that the largest group of students fell into the moderate impostor characteristics category, accounting for 85 students (43.4%). This was followed by mild impostor characteristics in 75 students (38.3%), frequent impostor characteristics in 31 students (15.8%), and intense impostor characteristics in 5 students (2.6%). These findings indicate that more than four-fifths of the participants experienced at least mild to moderate impostor feelings during their clinical education rotations.

For neck disability, as assessed by the Neck Disability Index, 81 students (41.3%) reported moderate disability, representing the largest category. In addition, 73 students (37.2%) had mild disability, while only 42 students (21.4%) reported no disability. These results suggest that the majority of participants experienced some degree of neck-related functional limitation during clinical rotations.

Perceived stress levels, measured using the Perceived Stress Scale, revealed that 95 students (48.5%) had moderate stress, making it the most common stress category. Meanwhile, 79 students (40.3%) reported low stress, and 22 students (11.2%) experienced high stress. Overall, nearly half of the study population experienced moderate stress, while more than one in ten students reported high stress.

Chi-square analysis demonstrated a statistically significant association between impostor syndrome and neck disability ($p < 0.001$). Students with higher levels of impostor characteristics were more likely to report greater neck disability, particularly within the moderate disability category. A significant association was also found between impostor syndrome and perceived stress ($p < 0.01$), indicating that students with more frequent or intense impostor feelings tended to have moderate to high stress levels. In addition, impostor

syndrome was significantly associated with gender ($p = 0.033$) and educational semester ($p = 0.01$). Female students showed higher levels of moderate impostor characteristics than male students, while students in earlier semesters, especially the 5th and 6th semesters, demonstrated greater impostor tendencies compared with those in later semesters.

A few fixes would make this stronger for journal submission. In the last paragraph, where you describe associations, it would be better to include the actual cross-tabulated frequencies or percentages for each CIPS category against NDI and PSS categories, not only the p-values. Without those counts, the paragraph is acceptable but still less complete than most journals prefer. Also, replace vague phrases like “more likely” with exact numbers once your crosstab outputs are available.

Table. 1 Continuous demographic variable of study

Variable	Mean	Standard Deviation (SD)
Age (years)	21.48	1.39
Body Height (cm)	164.08	7.47
Body Weight (kg)	65.21	6.85
Average Hours/Week in Clinical Rotations	15.90	3.44
Average Study Hours/Week Outside Rotations	15.09	3.03

Table. 2 Categorical demographic variables of study

Variable	Frequency (n)	Percentage (%)
Gender		
Male	83	42.3%
Female	113	57.7%
Semester		
5th Semester	17	8.7%
6th Semester	10	5.1%
7th Semester	59	30.1%
8th Semester	39	19.9%
9th Semester	41	20.9%
10th Semester	30	15.3%
Hospital for Clinical Rotation		
Sir Ganga Ram Hospital	42	21.4%
Social Security Hospital (Multan Road)	22	11.2%
University of Lahore Teaching Hospital	72	36.7%
Sehat Medical Complex (Hanjarwal)	49	25.0%
Mansoorah Hospital	6	3.1%

This study's results presented significant demographic and academic characteristics of the physical therapy students who participated. There were a total of 196 students, who had a mean age of 21.5 ± 1.39 years, and the sample included 57.7% females: the remaining 42.3% males. Height (164.08 ± 7.47 cm) and body weight (65.21 ± 6.85 kg) averaged among students. Students were placed in academic semesters ranging from 5th to 10th semester, with students being the highest in the 7th semester (30.1%). Students reported participation in an average of 15.90 ± 3.44 hours of clinical rotations and 15.09 ± 3.02 hours a week outside of the rotations studying. Clinical education took place at a variety of hospitals, with majority of students attending at University of Lahore Teaching Hospital (36.7%).

Table.3 CIPS, NDI and PSS score of students

Scale	Category	Frequency (n)	Percentage (%)
Clance Imposter Phenomenon Scale (CIPS)	Mild Imposter Characteristics	75	38.3
	Moderate Imposter Characteristics	85	43.4
	Frequent Imposter Characteristics	31	15.8
	Intense Imposter Characteristics	5	2.6
Neck Disability Index (NDI)	No Disability	42	21.4
	Mild Disability	73	37.2
	Moderate Disability	81	41.3
Perceived Stress Scale (PSS)	Low Stress	79	40.3
	Moderate Stress	95	48.5
	High Stress	22	11.2

Based on the CIPS, many respondents have mild or moderate impostor characteristics (38.3% mild, 43.4% moderate, 15.8% frequent, and 2.6% intense). Most were in the mild/moderate range. Based on the NDI (21.4%), respondents noted no limitation from neck disability, whereas 37.2% had mild and 41.3% had moderate limitations due to neck pain. Many respondents experienced neck pain and had some functional limitations. The PSS indicated 40.3% of respondents were classified as having low stress, 48.5% had moderate stress, and 11.2% had high stress levels.

Table.4 Association of demographic variables, neck disability and perceived stress with impostor syndrome

Association	p-value
CIPS × Neck Disability Index (NDI)	<0.001
CIPS × Perceived Stress Scale (PSS)	<0.01
CIPS × gender	0.033

The statistical examination revealed significant correlations between key variables in this study. Higher scores on impostor syndrome were significantly associated with states of neck disability, as students reporting more frequent and/or greater intensity of impostor syndrome were clustered in the moderate range for the NDI ($p < 0.001$). Students with impostor syndrome also experienced other significant associations with stress ($p < 0.01$), where more impostor syndrome students also reported more moderate to high stress. There were also significant associations between other demographic factors and impostor syndrome, such that female students were more likely to have a moderate impostor syndrome score ($p = 0.033$), and students earlier in the semester (especially in the 5th and 6th semester) had higher impostor syndrome tendencies when compared to students later in the semester ($p = 0.01$).

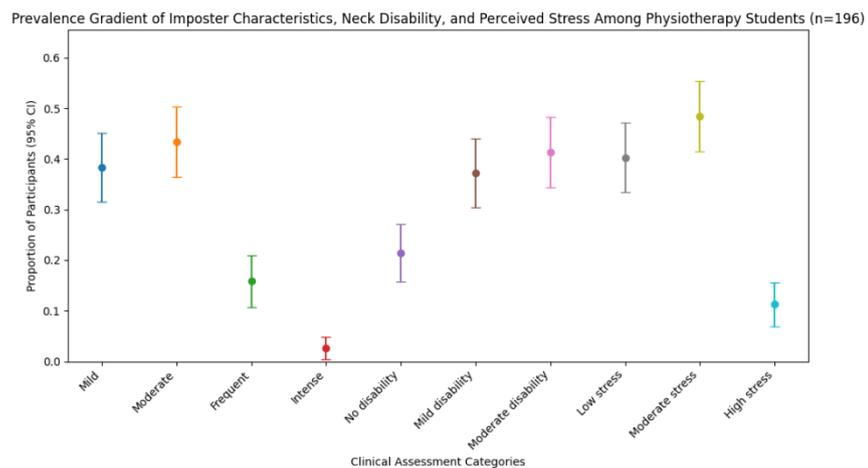


Figure 1 Prevalence Gradient of Imposter Characteristics, Neck Disability, and Perceived Stress Among Physiotherapy Students (N=196)

The visualization demonstrates the prevalence gradient and confidence distribution of impostor characteristics, neck disability, and perceived stress among physiotherapy students ($n = 196$). Moderate impostor characteristics showed the highest prevalence (43.4%, 95% CI ≈ 36.5 –50.3%), followed by mild levels (38.3%, CI ≈ 31.5 –45.1%), while intense impostor characteristics were rare (2.6%, CI ≈ 0.4 –4.8%). A similar gradient appeared in musculoskeletal outcomes, where moderate neck disability affected 41.3% of participants (CI ≈ 34.4 –48.2%), exceeding mild disability (37.2%) and absence of disability (21.4%). Stress distribution also clustered in the middle range, with 48.5% reporting moderate stress (CI ≈ 41.5 –55.5%), compared with 40.3% low stress and 11.2% high stress. The convergence of mid-level prevalence across psychological (impostor feelings), physiological (neck disability), and emotional (stress) measures suggests a shared central tendency in moderate symptom burden, indicating that the majority of students experience clinically relevant but sub-threshold levels of psychological and musculoskeletal strain during clinical rotations. This pattern supports the observed statistical associations and highlights a potential interaction gradient where moderate psychosocial stressors coincide with increased functional neck disability, reinforcing the need for early supportive and ergonomic interventions in clinical training environments.

DISCUSSION

The present study investigated the prevalence of impostor syndrome, neck disability, and perceived stress among undergraduate physiotherapy students during clinical education rotations and explored the relationship between these variables. The findings revealed that

impostor characteristics were highly prevalent among students, with the majority reporting mild to moderate levels. These results are consistent with previous research showing that healthcare trainees frequently experience feelings of intellectual self-doubt despite objective competence. The competitive academic environment, frequent evaluations, and exposure to complex clinical responsibilities during training may contribute to the development of impostor feelings among students (18). Similar patterns have been observed in medical and allied health education, where early clinical exposure often increases self-comparison with peers and senior professionals, thereby intensifying perceptions of inadequacy (19).

Another important finding of the present study was the high prevalence of neck disability among physiotherapy students. More than three-quarters of participants reported mild to moderate levels of neck disability, suggesting that musculoskeletal discomfort is a common concern during clinical training. Physiotherapy students often spend prolonged periods in static postures during patient assessments, treatment demonstrations, and study activities, which may contribute to muscular fatigue and postural strain. Previous studies have identified similar trends, indicating that prolonged clinical work and repetitive movements can increase the risk of neck and shoulder discomfort among healthcare students (20). Additionally, poor ergonomic practices and increased screen time during academic study may further exacerbate musculoskeletal strain in this population (21).

The results of this study also demonstrated that perceived stress levels were predominantly moderate among the participants. Nearly half of the students reported moderate stress, while a smaller proportion experienced high stress levels. Clinical rotations represent a transitional phase where students must simultaneously adapt to new responsibilities, interact with patients, and meet academic expectations. This multifaceted pressure may contribute to heightened stress levels. Similar findings have been reported among medical and physiotherapy students in various educational settings, where moderate to high stress levels are commonly observed during clinical training periods (22). Psychological stress in healthcare students has been associated with factors such as workload, performance expectations, time constraints, and uncertainty in clinical decision-making (23).

A key objective of the present study was to examine the relationship between impostor syndrome and both neck disability and perceived stress. The analysis revealed a statistically significant association between impostor characteristics and neck disability. Students who reported stronger impostor feelings were more likely to experience higher levels of neck-related functional limitations. Although limited research has directly examined the relationship between impostor syndrome and musculoskeletal symptoms, existing evidence suggests that chronic psychological stress can lead to increased muscle tension, particularly in the upper trapezius region (24). Persistent activation of stress-related physiological pathways may contribute to sustained muscle contraction, reduced relaxation capacity, and the development of myofascial discomfort.

Furthermore, the findings indicated a significant association between impostor syndrome and perceived stress levels. Participants with more frequent or intense impostor characteristics tended to report higher stress levels. This relationship aligns with previous research demonstrating that impostor phenomenon is closely linked with increased psychological distress, including anxiety, stress, and burnout (25). Individuals experiencing impostor feelings often engage in maladaptive coping behaviors such as excessive over-preparation or fear of evaluation, which may amplify stress responses and negatively affect mental wellbeing.

The study also identified significant associations between impostor syndrome and certain demographic variables. Female students reported higher levels of impostor characteristics

compared with male students, which is consistent with findings from previous studies that suggest women in competitive academic environments may experience greater self-doubt and pressure to prove competence (26). Additionally, students in earlier semesters demonstrated higher impostor tendencies than those in later semesters. This pattern may reflect the gradual development of confidence and clinical competence as students gain more experience and familiarity with patient care environments over time (27).

Collectively, the findings of this study highlight an interconnected relationship between psychological stress, impostor syndrome, and physical discomfort among physiotherapy students. The co-occurrence of these factors suggests that psychological experiences during clinical training may manifest not only as emotional strain but also as somatic symptoms such as trapezius myalgia and neck disability. Addressing these challenges requires a multifaceted approach that includes psychological support programs, stress management strategies, and ergonomic education within healthcare curricula (28). By implementing targeted interventions during clinical education, institutions may be able to reduce stress-related musculoskeletal symptoms and promote overall wellbeing among future healthcare professionals.

Future research should consider longitudinal designs to better understand causal pathways between impostor syndrome, stress, and musculoskeletal discomfort. Expanding the sample across multiple universities and healthcare disciplines may also improve the generalizability of findings. Additionally, incorporating objective biomechanical or electromyographic assessments could provide deeper insight into the physiological mechanisms linking psychological stress and trapezius muscle activity. Such investigations would help clarify the complex biopsychosocial interactions that influence student health during clinical training (29).

CONCLUSION

The present study demonstrated a high prevalence of impostor syndrome, neck disability, and perceived stress among undergraduate physiotherapy students during clinical education rotations. Most participants experienced mild to moderate impostor characteristics, moderate levels of perceived stress, and varying degrees of neck-related functional disability. Significant associations were observed between impostor syndrome and both perceived stress and neck disability, suggesting that psychological stress and self-doubt may contribute to musculoskeletal discomfort during clinical training. Additionally, impostor characteristics were more pronounced among female students and those in earlier semesters, indicating that experience and adaptation to clinical environments may influence these perceptions. These findings highlight the importance of integrating psychological support, stress management strategies, and ergonomic awareness within physiotherapy education programs to promote student wellbeing and reduce the risk of stress-related physical symptoms during clinical training.

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DECLARATIONS

Ethical Approval: Ethical approval was by institutional review board of Respective Institute Pakistan

Informed Consent: Informed Consent was taken from participants.

Authors' Contributions:

Concept: MA, AM, LQ, QAR, AR; Design: MA, AM; Data Collection: MA, LQ, QAR, AR; Analysis: MA, AM; Drafting: MA, AM, LQ, QAR, AR

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