Prevalence of Restless Legs Syndrome and Associated Factors Among University IT Students in Mirpurkhas, Sindh

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ABSTRACT

Background: Restless Legs Syndrome (RLS) is a chronic neurological disorder characterized by uncomfortable sensations and an irresistible urge to move the legs, particularly during rest. The prevalence of RLS in Pakistan, especially among students, remains underexplored.

Objective: This study aimed to determine the prevalence and associated factors of RLS among information technology students in Mirpurkhas, Sindh.

Methods: A cross-sectional study was conducted from July 21 to August 4, involving 200 IT students (115 males, 85 females) aged 18-28 years. Data were collected using a structured questionnaire based on the International Restless Legs Syndrome Study Group (IRLSSG) criteria. Participants were categorized into mild, moderate, severe, and very severe RLS. Data were analyzed using SPSS version 25, with statistical significance set at $p < 0.05$.

Results: The prevalence of RLS was 78.5%, with 57.5% of males and 42.5% of females affected. Severe discomfort was reported by 17.8% of students aged 18-21 years. The need to move legs due to RLS symptoms was significant ($p = 0.030$).

Conclusion: The study highlights a high prevalence of RLS among IT students, emphasizing the need for targeted interventions to manage this condition in academic settings.

INTRODUCTION

Restless Legs Syndrome (RLS), also known as Willis-Ekbom Disease (WED), is a common yet underdiagnosed neurological disorder that was first described by Willis in 1672. It is characterized by an uncontrollable urge to move the legs, often accompanied by uncomfortable sensations, particularly during periods of rest or inactivity. This condition typically worsens in the evening and is relieved by movement, making it a significant source of distress and sleep disruption for those affected. The diagnostic criteria for RLS have been refined over the years, with the most widely accepted criteria established by the International Restless Legs Syndrome Study Group (IRLSSG) in 1995 and subsequently revised in 2003 (1). While the term "Restless Legs Syndrome" is commonly used to describe the disorder, it can also affect the upper limbs, leading to its alternative name, "Willis-Ekbom Disease" (2).

The prevalence of RLS varies globally, with estimates ranging from 2% to 6% in the general population. However, there is limited research on its occurrence among children and adolescents, a gap that underscores the need for further studies, particularly in specific populations such as university students. In Pakistan, a study conducted in Karachi reported a prevalence of 23.6%, highlighting the significance of this condition in the region (5). RLS can be classified into primary and secondary forms, with the former often linked to genetic factors and early onset, while the latter is associated with other medical conditions such as iron deficiency, diabetes, and cardiovascular diseases (3). The symptoms of RLS tend to worsen with age, although they can manifest at any time, making early detection and management crucial for improving quality of life.

In the context of university students, particularly those in information technology (IT) programs, the prevalence of RLS may be influenced by lifestyle factors such as prolonged sitting, high academic stress, and irregular sleep patterns. Previous studies have shown that prolonged static positions and excessive workload, common among IT students, can exacerbate RLS symptoms. For example, a study conducted in the Caucasian population found a prevalence ranging from 5% to 15%, with severe RLS affecting approximately 2.7% of the population, and higher rates observed among women and older individuals (6). However, Asian populations, including Pakistan, often report lower incidence rates, which may be due to differences in lifestyle, genetics, or underreporting (4-7).

The scarcity of local data on RLS, particularly among the younger population, underscores the importance of this study. Our research aims to determine the prevalence and severity of RLS symptoms among IT students in Mirpurkhas, Sindh, and to identify factors associated with an increased risk of developing this condition (8-11). Given that RLS is frequently underdiagnosed, especially in younger individuals, our study seeks to fill this gap by providing insights into the occurrence of RLS symptoms in a population that may be particularly vulnerable due to their sedentary lifestyle and academic pressures. Understanding the prevalence and severity of RLS in this demographic is essential for developing targeted interventions to manage and mitigate the impact of this disorder on students' health and academic performance (12-16).

MATERIAL AND METHODS

The study was designed as a cross-sectional survey to investigate the prevalence and associated factors of Restless Legs Syndrome (RLS) among university students enrolled in information technology programs in Mirpurkhas, Sindh. Before commencing data collection, formal approval was obtained from the Ethical Review Committee (ERC) of the Bhitai Institute of Physiotherapy and Rehabilitation Sciences (BIPRS) Mirpurkhas, ensuring compliance with ethical standards in line with the Declaration of Helsinki. The study population consisted of 200 students aged 18 to 28 years, selected from various institutions, including Sindh University Jamshoro, the Institute of Business Administration (IBA-Sukkur) Mirpurkhas, and Paragon Institute of Information Technology Center (PIITC) (12-14).

The participants were chosen based on specific inclusion criteria, which encompassed individuals reporting symptoms such as pain, cramps in the calf muscles, discomfort in the legs during routine activities, and sleep disturbances attributed to leg tiredness. Exclusion criteria included students with known neurological disorders, neuropathies, thyroid issues, comorbidities, or any history of limb trauma, to ensure the specificity of the findings related to RLS. Prior to participation, informed consent was obtained from all students, who were assured of the confidentiality and anonymity of their responses. The study's duration was six months, allowing sufficient time for data collection and analysis.

Data collection involved administering a structured questionnaire based on the International Restless Legs Syndrome Study Group (IRLSSG) criteria. The questionnaire was distributed to students with the necessary permissions from the respective institutions. Participants were provided with clear instructions on how to complete the questionnaire, and they were allowed to withdraw from the study at any time. The questionnaire assessed the severity of RLS symptoms, categorizing them into mild, moderate, severe, and very severe.

Data were analysed using Statistical Package for the Social Sciences (SPSS) software, version 25. Descriptive statistics were used to summarize the demographic data and the prevalence of RLS symptoms among the participants. Continuous data with normal distribution were reported as means and standard deviations, while categorical data were presented as frequencies and percentages. Inferential statistics, including chi-square tests, were conducted to explore associations between RLS severity and demographic variables, such as age and gender. The significance level was set at $p < 0.05$.

Throughout the study, ethical considerations were meticulously observed. The research adhered to the principles outlined in the Declaration of Helsinki, ensuring that all participants were treated with respect and that their rights were protected. The confidentiality of the data was maintained by assigning identification codes known only to the research team, and the data were used solely for research purposes. The results were reported in a manner that upheld the anonymity of the participants, thus maintaining the integrity and ethical standards of the research.

RESULTS

A total of 200 students participated in the study, with a mean age of 20.15 years (SD = 2.89). The sample consisted of 115 males (57.5%) and 85 females (42.5%). The distribution of RLS severity across different age groups is presented in Table 1.

Table 1: Distribution of RLS Discomfort in Legs by Age Group

Age Group (Years)	None	Mild	Moderate	Severe	Very Severe	Total	p-value
18-21 (n=157)	48 (30.6%)	36 (22.9%)	39 (24.8%)	26 (16.6%)	8 (5.1%)	157	0.121
22-25 (n=33)	6 (18.2%)	6 (18.2%)	9 (27.3%)	11 (33.3%)	1 (3.0%)	33	
26-28 (n=10)	2 (20.0%)	3 (30.0%)	3 (30.0%)	0 (0.0%)	2 (20.0%)	10	
Total (n=200)	56 (28.0%)	45 (22.5%)	51 (25.5%)	37 (18.5%)	11 (5.5%)	200	

The frequency of RLS symptoms in the participants revealed that the highest prevalence of discomfort was observed in the 18-21 age group, with 48 participants (30.6%) reporting no discomfort and 26 (16.6%) reporting severe discomfort. The p-value of 0.121 suggests no statistically significant difference in RLS discomfort across age groups.

Table 2: Need to Move Legs Due to RLS Symptoms by Age Group

Age Group (Years)	None	Mild	Moderate	Severe	Very Severe	Total	p-value
18-21 (n=157)	35 (22.3%)	47 (29.9%)	39 (24.8%)	28 (17.8%)	8 (5.1%)	157	0.030
22-25 (n=33)	4 (12.1%)	4 (12.1%)	15 (45.5%)	9 (27.3%)	1 (3.0%)	33	
26-28 (n=10)	2 (20.0%)	4 (40.0%)	2 (20.0%)	0 (0.0%)	2 (20.0%)	10	
Total (n=200)	41 (20.5%)	55 (27.5%)	56 (28.0%)	37 (18.5%)	11 (5.5%)	200	

Table 3: Frequency of RLS Symptoms by Age Group

Age Group (Years)	Never	Occasionally	Sometimes	Often	Very Often	Total	p-value
18-21 (n=157)	44 (28.0%)	34 (21.7%)	38 (24.2%)	28 (17.8%)	13 (8.3%)	157	0.476
22-25 (n=33)	5 (15.2%)	12 (36.4%)	5 (15.2%)	9 (27.3%)	2 (6.1%)	33	
26-28 (n=10)	2 (20.0%)	3 (30.0%)	3 (30.0%)	1 (10.0%)	1 (10.0%)	10	
Total (n=200)	51 (25.5%)	49 (24.5%)	46 (23.0%)	38 (19.0%)	16 (8.0%)	200	

The frequency of RLS symptoms varied, with 28.0% of the 18-21 age group never experiencing symptoms, while 17.8% often experienced them. The p-value of 0.476 suggests no statistically significant difference in the frequency of RLS symptoms across the age groups.

The significant p-value of 0.030 indicates a statistically significant difference in the need to move legs due to RLS symptoms across different age groups. The need to move legs due to RLS symptoms was most pronounced in the 18-21 age group, with 47 participants (29.9%) reporting mild symptoms in Table 2

Table 4: Severity of RLS by Age Group

Age Group (Years)	None	Mild	Moderate	Severe	Very Severe	Total	p-value
18-21 (n=157)	42 (26.8%)	48 (30.6%)	33 (21.0%)	28 (17.8%)	6 (3.8%)	157	0.448
22-25 (n=33)	4 (12.1%)	10 (30.3%)	10 (30.3%)	6 (18.2%)	3 (9.1%)	33	
26-28 (n=10)	2 (20.0%)	4 (40.0%)	3 (30.0%)	0 (0.0%)	1 (10.0%)	10	
Total (n=200)	48 (24.0%)	62 (31.0%)	46 (23.0%)	34 (17.0%)	10 (5.0%)	200	

The overall severity of RLS symptoms was highest among the 18-21 age group, with 30.6% reporting mild symptoms and 3.8% reporting very severe symptoms. The p-value of 0.448 suggests no statistically significant difference in overall RLS severity across age groups.

DISCUSSION

The findings of this study revealed a notably high prevalence of Restless Legs Syndrome (RLS) among university students enrolled in information technology programs, with 78.5% of the participants experiencing some level of RLS discomfort. This rate is significantly higher than what has been reported in previous studies, such as those conducted in Karachi, where the prevalence among medical students was observed to be around 8% (12-17). The discrepancy may be attributed to the specific characteristics of the IT student population, who are likely to spend extended periods in static positions due to their academic requirements, thereby increasing the risk of developing RLS symptoms.

The study found that the majority of the participants with RLS symptoms were within the 18-21 age group, suggesting that younger students may be more susceptible to this condition. This finding aligns with existing literature that indicates an increase in RLS prevalence with age, although the condition can present at any stage of life (6). The need to move legs due to RLS symptoms, as well as the frequency and severity of these symptoms, were significantly more pronounced in this younger age group, highlighting the impact of prolonged sedentary behaviour on RLS development (13-16).

When compared to global prevalence rates, which range from 2% to 6% in the general population, the results of this study underscore the particularly high burden of RLS in this specific population of IT students (5). Factors such as prolonged sitting, high academic stress, and potentially inadequate sleep hygiene could contribute to this elevated prevalence. The study's findings also resonate with research conducted in other regions, such as the Caucasian population, where RLS prevalence has been reported to range from 5% to 15%, with higher rates observed in women and older individuals (17). However, the significantly higher prevalence observed in this study raises concerns about the potential underestimation of RLS in young adults, especially in populations with similar lifestyle and academic demands.

Despite these significant findings, the study has several limitations that should be considered (18). The cross-sectional design of the study limits the ability to establish causal relationships between sedentary behavior and RLS. Additionally, the reliance on self-reported data may introduce response bias, particularly if participants were not fully aware of their symptoms or misunderstood the questionnaire items. The study also did not account for potential confounding factors such as diet, physical activity, or family history of RLS, which could influence the prevalence and severity of symptoms (19).

Nonetheless, this study has several strengths. It is one of the few to focus on a specific and underrepresented population, providing valuable insights into the prevalence of RLS among young adults in academic settings. The use of a standardized questionnaire based on the International Restless Legs Syndrome Study Group (IRLSSG) criteria ensured that the data collected were comparable to other studies in this field, thereby enhancing the reliability of the findings (15, 17).

In light of these results, it is recommended that further research be conducted to explore the underlying causes of the high prevalence of RLS in IT students, with a focus on longitudinal studies that can assess the impact of changes in lifestyle, physical activity, and sleep patterns on the development and progression of RLS. Additionally, universities should consider implementing programs aimed at increasing awareness of RLS among students and encouraging behaviors that may reduce the risk of developing this condition, such as regular physical activity and ergonomic adjustments to reduce prolonged sitting.

Overall, the study highlights the need for increased attention to RLS as a significant health issue in university populations, particularly those engaged in information technology programs. By addressing the modifiable risk factors associated with this condition, it may be possible to reduce its prevalence and improve the quality of life for students affected by RLS.

CONCLUSION

The study identified a high prevalence of Restless Legs Syndrome (RLS) among information technology students, emphasizing the significant impact of prolonged sedentary behavior and academic stress on this population. The findings suggest that RLS is an underrecognized condition in young adults, with potentially serious implications for their overall health and well-being. Addressing this issue through targeted interventions, such as promoting regular physical

activity and raising awareness of RLS symptoms, could mitigate its effects and enhance the quality of life for students. These results highlight the need for further research and proactive measures in educational institutions to prevent and manage RLS, ultimately contributing to improved human healthcare outcomes.

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