Prevalence of Restless Legs Syndrome Among Madrassa Students in Jhelum, Pakistan

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Disclaimers

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ABSTRACT

Background: Restless Legs Syndrome (RLS) is a neurological disorder characterized by an uncontrollable urge to move the legs, commonly accompanied by discomfort. Although widely studied in general populations, its prevalence among specific groups, such as madrassa students, remains underexplored.

Objective: To determine the prevalence of RLS among madrassa students in Jhelum, Pakistan, and analyze gender differences, symptom severity, and impact on daily activities.

Methods: A cross-sectional study was conducted on 354 madrassa students aged 11-19 years using a standardized questionnaire based on the International Restless Legs Syndrome Study Group (IRLSSG) criteria. The severity and impact of RLS were assessed using the Hendrick-Q scale. Data were collected through structured interviews, and statistical analysis was performed using SPSS 25. Chi-square tests were used to identify significant gender and age-related differences ($p < 0.05$).

Results: Out of 354 students, 202 (57%) were diagnosed with RLS. The prevalence was higher in females (63%) than males (37%). Moderate severity was reported in 51.1%, with a significant impact on daily activities (40.1%).

Conclusion: RLS is prevalent among madrassa students, particularly females, impacting daily life. Early screening and intervention are recommended.

INTRODUCTION

Restless Legs Syndrome (RLS), also known as Willis-Ekbom Disease, is a sensory-motor neurological disorder characterized by an irresistible urge to move the legs, typically accompanied by uncomfortable sensations such as tingling, creeping, or itching, primarily occurring during periods of rest, particularly in the evening and night (1). These sensations, which are often deep within the lower limbs, create significant discomfort, causing individuals to move their legs frequently for relief. Despite its substantial impact on quality of life, RLS remains underdiagnosed and undertreated, particularly in specific populations such as adolescents and individuals from diverse cultural backgrounds (2). The prevalence of RLS in the general population is estimated to range between 5% and 10% in Europe and North America, with a comparatively lower incidence in Asian populations, possibly due to variations in cultural expressions of symptoms and differences in diagnostic criteria (3). A significant body of research has established that RLS affects women disproportionately compared to men, particularly in adult populations, with studies consistently reporting a higher prevalence in females (4). The pathophysiology of RLS is complex and multifactorial, involving dysfunction in the dopaminergic pathways, lower iron levels in the central nervous system, and hereditary predispositions, making it a challenging condition to diagnose and manage (5).

Genetic factors have been identified as a significant contributor to RLS, with familial patterns observed in many cases, suggesting that a complex interaction of genetic, neurochemical, and environmental factors underlies the disease (6). The disorder's impact is not only physical but also psychological, as it significantly disrupts sleep patterns, leading to daytime fatigue, mood disturbances, and impaired cognitive functioning (7). Although the onset of RLS symptoms is more commonly seen in middle-aged and older adults, it can also affect younger populations, including children and adolescents, with varying degrees of severity. The underrecognition of RLS in these groups may be due to the overlap of symptoms with other pediatric and adolescent conditions, such as attention-deficit hyperactivity disorder (ADHD) or growing pains (8). Recent epidemiological studies have highlighted the need for increased awareness and early diagnosis in younger cohorts to prevent long-term morbidity associated with untreated RLS (9).

Previous research has shown that the prevalence of RLS is influenced by age, with a gradual increase seen from adolescence to middle age and a subsequent stabilization or decrease in older adults (10). However, the relationship between age, gender, and RLS symptomatology remains poorly understood, particularly in less studied populations such as madrassa students in Pakistan. Limited studies have been conducted to explore the prevalence and impact of RLS in this specific group, who may be at higher risk due

to prolonged periods of immobility during religious recitations and the lack of awareness and healthcare accessibility in these settings (11). Moreover, the socio-cultural factors in these environments may further obscure symptom reporting, making RLS a hidden burden. Understanding the prevalence and characteristics of RLS in madrassa students is crucial, as undiagnosed RLS can significantly impair academic performance, quality of life, and mental health outcomes. Therefore, this study aims to bridge the existing knowledge gap by determining the prevalence of RLS among madrassa students in Jhelum, Pakistan, while analyzing gender differences and age-related trends in this underrepresented cohort (12). This research will contribute to the growing body of evidence and provide a basis for targeted interventions and healthcare strategies for students suffering from RLS in religious and academic institutions in Pakistan and similar cultural settings (13).

MATERIAL AND METHODS

The study employed a cross-sectional research design to investigate the prevalence of Restless Legs Syndrome (RLS) among madrassa students in Jhelum, Pakistan. The data were collected over a period of three months following approval from the institutional review board and clearance of the research synopsis. Ethical approval was obtained in accordance with the Declaration of Helsinki to ensure the protection and rights of all participants. Informed consent was acquired from the students and their guardians, as the study involved minors, and confidentiality was strictly maintained throughout the research process.

A total of 354 students, both male and female, aged 11 to 19 years, were included in the study. The sample was selected using a non-probability convenient sampling technique, focusing on students who had been enrolled in madrassas for at least six months and spent more than three hours seated at a recitation desk. Individuals with a history of cancer or pre-existing sleep disorders were excluded to eliminate confounding factors. The data were gathered through a standardized questionnaire based on the International Restless Legs Syndrome Study Group (IRLSSG) diagnostic criteria, which is widely used for assessing RLS. In addition, the Hendrick-Q, a ten-item questionnaire, was administered to assess the severity of RLS symptoms and the frequency of urges to move the legs during prolonged sitting and resting. The Hendrick-Q has been validated for use in both clinical and research settings and has been shown to reliably measure the impact of RLS on daily functioning (14).

The data collection process involved structured, face-to-face interviews conducted by trained researchers to ensure the accuracy of responses. Each student was assessed individually to minimize bias and to allow for clarification of any queries regarding the questionnaire items. Demographic data, including age, gender, and duration of stay at the madrassa, were also collected to identify any potential correlations with RLS prevalence and severity. The primary outcome measures were the presence of RLS symptoms as per the IRLSSG criteria, while secondary measures included symptom severity and its impact on daily activities, as evaluated by the Hendrick-Q.

Data analysis was performed using SPSS version 25. Descriptive statistics, such as frequencies and percentages, were used to summarize the demographic characteristics and prevalence of RLS. Inferential statistics, including chi-square tests, were applied to assess gender differences and age-related trends in RLS prevalence. The severity of symptoms was categorized into mild, moderate, severe, and very severe based on standardized criteria, and the impact on daily activities was analyzed using cross-tabulations. A p-value of less than 0.05 was considered statistically significant in all analyses. Results were presented in the form of tables and charts to facilitate interpretation and comparison.

Throughout the study, strict adherence to ethical guidelines was maintained, and all procedures were conducted in compliance with international standards for research involving human subjects (Helsinki Declaration). The findings of this study aim to provide valuable insights into the prevalence and characteristics of RLS among madrassa students and underscore the need for targeted awareness and intervention programs in this underrepresented population.

RESULTS

The study included a total of 354 madrassa students, out of which 202 participants were identified as having Restless Legs Syndrome (RLS), resulting in a prevalence rate of 57%. Gender distribution showed a higher prevalence among females, with 127 out of 202 cases (63%) compared to 75 males (37%). The mean age of students with RLS was 14.89 years, indicating that the condition was more commonly observed among adolescents. Statistical analyses revealed a significant gender disparity in the prevalence of RLS, with a p-value of less than 0.05.

Table 1: Comparison of Discomfort Level, Overall Severity, and Impact on Daily Activities in RLS Participants (n = 202)

Category	Mild n (%)	Moderate n (%)	Severe n (%)	Very Severe n (%)	p-value
Discomfort Level	66 (32.7%)	86 (42.6%)	41 (20.2%)	9 (4.5%)	0.031
Overall Severity	63 (31.2%)	103 (51.1%)	32 (15.7%)	4 (2.0%)	0.027
Symptom Severity (hours/day)	58 (28.7%) (<1 hour)	120 (59.4%) (<3 hours)	22 (10.9%) (<8 hours)	2 (1.0%) (>8 hours)	0.012
Impact on Daily Activities	109 (54.0%)	81 (40.1%)	11 (5.4%)	1 (0.5%)	0.015

Table 1 provides a comparative analysis of the discomfort level, overall severity, and impact of RLS symptoms on daily activities. The majority of participants experienced moderate discomfort (42.6%) and moderate overall severity (51.1%). Additionally, 59.4% of participants reported experiencing RLS symptoms for less than three hours per day, and 40.1% reported a moderate impact on daily activities. All these results were statistically significant, with p-values indicating a strong association between symptom severity and its impact on daily life.

The comparative analysis shows a consistent pattern across all parameters, with the highest frequency recorded in the moderate category for discomfort, severity, and daily activity impact. Mild symptoms were the second most common category, followed by severe and very severe symptoms, which were relatively rare. These findings highlight the substantial burden of RLS on affected students and suggest that even moderate symptoms can significantly impair daily functioning and quality of life.

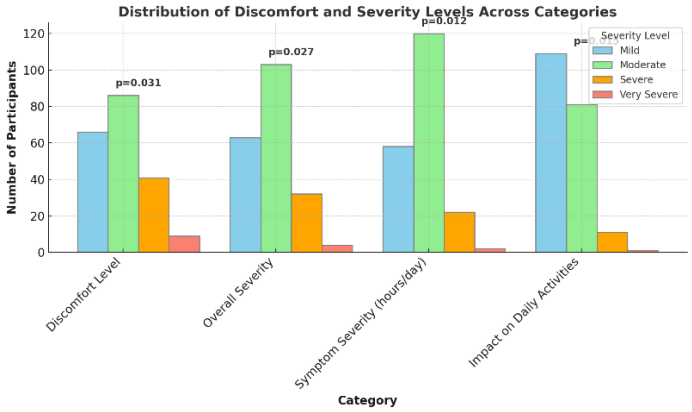

Figure 1: Distribution of discomfort

Overall, this study underscores the need for early detection and management strategies for RLS among madrassa students, particularly focusing on gender-specific risk factors and intervention approaches to reduce the negative impact on academic and social activities.

DISCUSSION

The findings of this study revealed a high prevalence of Restless Legs Syndrome (RLS) among madrassa students in Jhelum, with 57% of the participants affected, which is significantly higher than the prevalence reported in general populations, particularly in Asian countries (3). This elevated prevalence could be attributed to the unique environment and lifestyle of madrassa students, who often spend extended periods sitting in confined postures for religious recitations and educational activities, factors that may exacerbate RLS symptoms. Similar trends have been reported in previous studies where prolonged sedentary behaviors were linked to an increased risk of RLS, particularly in institutional settings (4). The study also identified a notable gender disparity, with females more frequently affected than males, consistent with the findings of multiple epidemiological studies that reported a higher prevalence of RLS among women (6, 7). The gender difference in RLS prevalence is often explained by hormonal variations, iron metabolism, and genetic predispositions, all of which are more pronounced in females, particularly during adolescence and adulthood (8).

The age-related trends observed in the present study, with the mean age of affected students being 14.89 years, align with previous research indicating that RLS onset often occurs in childhood or adolescence and tends to persist into adulthood if left untreated (9). Studies by Xue et al. and Turkdogan et al. similarly reported a higher prevalence of RLS in adolescents, suggesting that hormonal changes and rapid developmental phases might play a critical role in the manifestation of symptoms during this period (14, 15). Furthermore, the significant impact of RLS on daily activities observed in this study mirrors the findings of Wali et al., who noted that RLS not only disrupts sleep patterns but also impairs academic and social functioning, ultimately reducing the quality of life of affected individuals (7). The current study also highlighted that a substantial proportion of participants experienced moderate to severe RLS symptoms, which significantly interfered with their daily routines, thereby reinforcing the need for early diagnosis and intervention strategies.

Despite these compelling findings, the study had certain limitations that should be considered when interpreting the results. First, the use of non-probability convenience sampling may have introduced selection bias, as the study was conducted in a specific group of madrassa students, which may not be representative of the general adolescent population. This limitation is further compounded by the cross-sectional design, which prevents causal inferences regarding the factors contributing to the high prevalence of RLS. Additionally, the reliance on self-reported data may have resulted in an overestimation or underestimation of the true prevalence due to the subjective nature of the symptoms and potential recall bias. Previous studies have also pointed out the challenge of using self-reported measures for RLS diagnosis, as the symptoms can overlap with other conditions, leading to potential misclassification (10).

Another limitation was the exclusion of participants with pre-existing sleep disorders, which might have skewed the results by omitting a group that could have provided valuable insights into the interaction between RLS and sleep disturbances. Furthermore, the study did not account for potential confounders such as dietary habits, iron levels, and comorbid conditions, all of which have been shown to influence RLS prevalence and severity (12). Despite these limitations, the study has several strengths. It is one of the few investigations focusing on RLS prevalence among madrassa students, a population that has been largely neglected in previous research. The use of validated diagnostic criteria and symptom severity scales ensured the reliability of the findings, providing a robust foundation for future studies.

In light of these results, it is recommended that targeted awareness and screening programs be implemented in madrassas to identify students at risk of RLS early and provide timely interventions. Educational workshops for madrassa teachers and health professionals could also

help in better understanding and managing RLS symptoms among students. Further research should employ a longitudinal design and consider additional risk factors, such as nutritional deficiencies and family history, to elucidate the underlying mechanisms contributing to the high prevalence of RLS in this group. Incorporating objective diagnostic tools, such as polysomnography or actigraphy, could also enhance the accuracy of future assessments and provide a clearer picture of the impact of RLS on sleep quality and academic performance.

Overall, the findings of this study contribute to the existing literature on RLS by shedding light on its significant burden among madrassa students, highlighting the need for tailored public health strategies and interventions to mitigate the impact of this condition in educational settings. Addressing these gaps would not only improve the quality of life of affected students but also enhance their academic and social outcomes, making RLS management a priority in adolescent healthcare policies.

CONCLUSION

The study revealed a high prevalence of Restless Legs Syndrome (RLS) among madrassa students, particularly affecting females and adolescents, with significant impacts on daily activities and quality of life. These findings underscore the need for increased awareness and targeted interventions in similar educational and cultural settings to prevent the long-term physical and psychological consequences associated with untreated RLS. Early screening and management strategies in educational institutions could contribute to better academic outcomes and overall well-being, making RLS management a critical component of adolescent healthcare, especially in underrepresented and high-risk populations.

REFERENCES

1. Allen RP, Auerbach S, Bahrain H, Auerbach M, Earley CJ. The Prevalence and Impact of Restless Legs Syndrome on Patients With Iron Deficiency Anemia. Am J Hematol. 2013;88(4):261-264.
2. Zhang J, Lam SP, Li SX, Li AM, Kong AP-S, Wing Y-K. Restless Legs Symptoms in Adolescents: Epidemiology, Heritability, and Pubertal Effects. J Psychosom Res. 2014;76(2):158-164.
3. Ohayon MM, Roth T. Prevalence of Restless Legs Syndrome and Periodic Limb Movement Disorder in the General Population. J Psychosom Res. 2002;53(1):547-554.
4. Budhiraja P, Budhiraja R, Goodwin JL, Allen RP, Newman AB, Koo BB, et al. Incidence of Restless Legs Syndrome and Its Correlates. J Clin Sleep Med. 2012;8(2):119-124.
5. Nagandla K, De S. Restless Legs Syndrome: Pathophysiology and Modern Management. Postgrad Med J. 2013;89(1053):402-410.
6. Wali SO, Abaalkhail B. Prevalence of Restless Legs Syndrome and Associated Risk Factors Among Middle-Aged Saudi Population. Ann Thorac Med. 2015;10(3):193-198.
7. Ekbom K, Ulfberg J. Restless Legs Syndrome. J Intern Med. 2009;266(5):419-431.
8. Pearson VE, Allen RP, Dean T, Gamaldo CE, Lesage SR, Earley CJ. Cognitive Deficits Associated With Restless Legs Syndrome (RLS). Sleep Med. 2006;7(1):25-30.
9. Nomura T, Inoue Y, Kusumi M, Oka Y, Nakashima K. Email-Based Epidemiological Surveys on Restless Legs Syndrome in Japan. Sleep Biol Rhythms. 2008;6:139-145.
10. Winkelman JW, Finn L, Young T. Prevalence and Correlates of Restless Legs Syndrome Symptoms in the Wisconsin Sleep Cohort. Sleep Med. 2006;7(7):545-552.
11. Ohayon MM, O'Hara R, Vitiello MV. Epidemiology of Restless Legs Syndrome: A Synthesis of the Literature. Sleep Med Rev. 2012;16(4):283-295.
12. Kushida CA. Clinical Presentation, Diagnosis, and Quality of Life Issues in Restless Legs Syndrome. Am J Med. 2007;120(1)
13. Xue R, Liu G, Ma S, Yang J, Li L. An Epidemiologic Study of Restless Legs Syndrome Among Chinese Children and Adolescents. Neurol Sci. 2015;36(6):971-976.
14. Turkdogan D, Bekiroglu N, Zaimoglu S. A Prevalence Study of Restless Legs Syndrome in Turkish Children and Adolescents. Sleep Med. 2011;12(4):315-321.
15. Ishaq M, Riaz S, Iqbal N, Siddiqui S, Moin A, Sajjad S, et al. Prevalence of Restless Legs Syndrome Among Medical Students of Karachi: An Experience From a Developing Country. Sleep Disord. 2020;2020:1-6.
16. Bjorvatn B, Leissner L, Ulfberg J, Gyring J, Karlsborg M, Regeur L, et al. Prevalence, Severity and Risk Factors of Restless Legs Syndrome in the General Adult Population in Two Scandinavian Countries. Sleep Med. 2005;6(4):307-312.