

PREVALENCE AND SEVERITY OF RESTLESS LEGS SYNDROME AMONG MEDICAL STUDENTS AT JALAL-ABAD, KYRGYZSTAN: A CROSS-SECTIONAL STUDY

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ABSTRACT

Background: Restless Legs Syndrome (RLS) is a prevalent sensorimotor neurological disorder characterized by an irresistible urge to move the legs, typically accompanied by uncomfortable sensations that worsen during rest and at night and are relieved by movement. Although increasingly recognized across diverse populations, data on RLS prevalence among medical students in Central Asia, including Kyrgyzstan, remain limited.

Methods: A cross-sectional observational study was conducted from December 10, 2025, to March 20, 2026, at Jalal-Abad, Kyrgyzstan. Using convenience sampling, 450 undergraduate medical students (62.2% male, 37.8% female) aged 18–26 years completed a structured, self-administered questionnaire incorporating the four essential IRLSSG diagnostic criteria and adapted questions from the IRLSSG Rating Scale. Data were analyzed using descriptive statistics in Microsoft Excel and SPSS.

Results: Approximately 20% (n=90) of participants satisfied all four IRLSSG criteria for probable RLS. Symptoms were predominantly mild to moderate in severity (mean overall symptom score: 1.3 on a 0–5 scale). A total of 17.8% reported that leg symptoms adversely affected academic performance or daily activities, and 20% slept fewer than five hours per night. Family history of RLS was noted in 17.8%, and 57.8% expressed interest in learning RLS management strategies.

Conclusion: This study identifies a 20% prevalence of probable RLS among medical students in Kyrgyzstan—comparable to findings from Saudi Arabia and exceeding those from Pakistan—with notable sleep disruption and academic impact. Routine screening, sleep hygiene education, and targeted interventions addressing modifiable risk factors should be incorporated into medical training programs. Multi-center, clinically validated studies across Central Asia are warranted.

Keywords: restless legs syndrome, RLS, IRLSSG, medical students, prevalence

РАСПРОСТРАНЕННОСТЬ И ТЯЖЕСТЬ СИНДРОМА БЕСПОКОЙНЫХ НОГ СРЕДИ СТУДЕНТОВ-МЕДИКОВ В ДЖАЛАЛ-АБАДЕ, КЫРГЫЗСТАН: ПОПЕРЕЧНОЕ ИССЛЕДОВАНИЕ

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АННОТАЦИЯ

Введение: Синдром беспокойных ног (СБН) — распространенное сенсомоторное неврологическое расстройство, характеризующееся непреодолимым желанием двигать ногами, обычно сопровождающимся неприятными ощущениями, которые усиливаются в состоянии покоя и ночью и проходят при движении. Хотя он все чаще встречается в различных группах населения, данные о распространенности СБН среди студентов-медиков в Центральной Азии, включая Кыргызстан, остаются ограниченными.

Методы: В период с 10 декабря 2025 года по 20 марта 2026 года в Джалал-Абаде, Кыргызстан, было проведено поперечное обсервационное исследование. С помощью метода удобной выборки 450 студентов-медиков (62,2% мужчин, 37,8% женщин) в возрасте 18–26 лет заполнили структурированную анкету для самостоятельного заполнения, включающую четыре основных диагностических критерия IRLSSG и адаптированные вопросы из рейтинговой шкалы IRLSSG. Данные были проанализированы с использованием описательной статистики в Microsoft Excel и SPSS.

Результаты: Примерно 20% (n=90) участников соответствовали всем четырем критериям IRLSSG для вероятного синдрома беспокойных ног. Симптомы были преимущественно легкой и умеренной степени тяжести (средний общий балл по симптомам: 1,3 по шкале от 0 до 5). В общей сложности 17,8% сообщили, что симптомы в ногах негативно влияют на успеваемость или повседневную деятельность, а 20% спали менее пяти часов в сутки. Семейный анамнез синдрома беспокойных ног был отмечен у 17,8%, и 57,8% выразили заинтересованность в изучении стратегий управления синдромом беспокойных ног.

Вывод: Данное исследование выявило 20% распространенность вероятного синдрома беспокойных ног среди студентов-медиков в Кыргызстане — сопоставимую с результатами исследований в Саудовской Аравии и превышающую результаты исследований в Пакистане — с заметным нарушением сна и влиянием на успеваемость. В программы медицинского образования следует включить рутинный скрининг, обучение гигиене сна и целенаправленные вмешательства, направленные на модифицируемые факторы риска. Необходимы многоцентровые клинически подтвержденные исследования в Центральной Азии.

Ключевые слова: синдром беспокойных ног, синдром беспокойных ног, IRLSSG, студенты-медики, распространенность

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1. INTRODUCTION

Restless Legs Syndrome (RLS) is a common sensorimotor disorder that significantly impairs sleep quality and daytime functioning. Diagnosis is established according to the criteria developed by the National Institutes of Health (NIH) and the International Restless Legs Syndrome Study Group (IRLSSG), which require the simultaneous presence of four cardinal features: (i) a compelling urge to move the legs, usually accompanied by uncomfortable and unpleasant sensations; (ii) the urge to move or the uncomfortable sensations begin or worsen during periods of rest or inactivity; (iii) the urge to move or unpleasant sensations are partially or wholly relieved by movement, such as walking or stretching, for at least as long

as the activity continues; and (iv) the urge to move or unpleasant sensations are worse in the evening or night compared to the daytime [1].

RLS continues to be substantially underdiagnosed among young adults, despite the considerable discomfort and disruption it imposes. Within the medical student population, untreated RLS may intensify sleep disturbances, compromise cognitive performance and academic achievement, and heighten the risk of burnout—an increasingly pressing challenge in contemporary medical education [2]. RLS typically demonstrates a favorable response to dopaminergic therapy, implying that its pathophysiology involves dysfunction in central dopaminergic pathways and neurotransmission. The condition is considered relatively common, with prevalence estimates for adults in North America and Europe ranging from 4% to 29% [3].

Epidemiological data from medical student cohorts across multiple regions have yielded variable prevalence estimates. In Karachi, Pakistan, the prevalence of RLS was 8%, with a clear female predominance, predominantly mild-to-moderate symptom severity, and only mild associated sleep disturbances [4]. University-based studies have reported rates of 9.9% in a Turkish cohort where RLS was associated with impaired academic performance [10], 2.6% for primary RLS in another Turkish single-centre study [5], and up to 23% overall (with 6% persistent cases) among Estonian university students [9]. These figures suggest that RLS may be more prevalent among young, otherwise healthy adults under academic stress than general population estimates indicate.

A recent observational study among medical students in Saudi Arabia reported a RLS prevalence of 20.2%, with 23.9% of affected students experiencing mild-to-severe symptoms. The condition was significantly associated with daytime fatigue (40.3%), sleep disturbances (33.4%), comorbidities including iron-deficiency anemia, smoking (37%), and high caffeine intake (42.9% among heavy consumers versus 18.6% in non-heavy consumers) [6].

Despite evidence from diverse settings—including Pakistan, Saudi Arabia, Turkey, Estonia, Egypt, and Jordan [1,2,3,4,5,6,7,8,9,10]—there remains a notable paucity of data on RLS among medical students in Central Asia, including Kyrgyzstan. Regional factors such as dietary patterns, environmental stressors, genetic predispositions, and differences in healthcare access may influence the prevalence and severity of RLS in ways distinct from previously studied populations.

The primary aim of this study is to determine the prevalence and severity of RLS among undergraduate medical students in Jalal-Abad, Kyrgyzstan. Specific objectives include: (i) estimating point prevalence of RLS using the validated IRLSSG diagnostic criteria; (ii) assessing symptom severity using the IRLSSG Rating Scale; (iii) evaluating associations between RLS prevalence and potential risk factors including gender, year of study, sleep duration, caffeine intake, stress, physical activity, smoking, and self-reported comorbidities; (iv) investigating the impact of RLS on sleep quality, daytime fatigue, and academic performance; and (v) contributing region-specific epidemiological evidence from Central Asia, where published data remain sparse.

2. METHODOLOGY

2.1 Study Design and Setting

This cross-sectional observational study was conducted among undergraduate medical students at Jalal-Abad, Kyrgyzstan, from December 10, 2025, to March 20, 2026.

2.2 Study Population and Sampling

A convenience sampling approach was used to recruit students across the first through fifth years of study. Inclusion criteria comprised: currently enrolled medical students aged 18–26 years who provided voluntary informed consent. Students with pre-existing neurological disorders capable of mimicking RLS symptoms, or those unwilling to participate, were excluded. A total of 450 students participated.

2.3 Study Instrument

A structured, self-administered questionnaire was developed in English, with optional translation into Kyrgyz or Russian upon request. The instrument comprised four components: (1) sociodemographic and lifestyle characteristics (gender, age, year of study, BMI, smoking status, sleep duration); (2) the four essential IRLSSG diagnostic criteria, to which participants responded 'Yes,' 'Maybe,' or 'No'—participants endorsing all four items with 'Yes' were classified as having probable RLS; (3) adapted IRLSSG Rating Scale questions assessing overall symptom severity (0–5 scale), symptom frequency, and impact on daily activities and academic performance (0–4 scale); and (4) supplementary items on family history of RLS, academic impact, comorbid conditions, and interest in RLS education. The questionnaire was distributed via Google Forms and in paper format.

2.4 Ethical Considerations

The study was approved by the Institutional Review Board and Ethics Committee of Jalal-Abad State University. All participants provided informed consent. Strict confidentiality and data security were maintained throughout.

2.5 Statistical Analysis

Data were entered and analyzed using Microsoft Excel and SPSS. Descriptive statistics—frequencies, percentages, and mean scores—were computed to summarize demographic characteristics, RLS prevalence, symptom severity, and functional impact. Results are reported as absolute numbers and percentages.

3. RESULTS

3.1 Sociodemographic Characteristics

Of the 450 participants, 280 (62.2%) were male and 170 (37.8%) were female. The majority were aged 21–23 years (53.3%, $n=240$), followed by 24–26 years (37.8%, $n=170$) and 18–20 years (8.9%, $n=40$). Regarding year of study, 5th-year students comprised the largest group (51.1%, $n=230$), followed by 4th-year (17.8%, $n=80$), 1st-year (13.3%, $n=60$), 3rd-year (11.1%, $n=50$), and 2nd-year (6.7%, $n=30$) students (Table 1).

Table 1. Sociodemographic characteristics of study participants ($n=450$)

Variable	Category	Frequency	Percentage (%)
Gender	Male	280	62.2%
	Female	170	37.8%
Age Group	18–20 years	40	8.9%
	21–23 years	240	53.3%
	24–26 years	170	37.8%

Variable	Category	Frequency	Percentage (%)
Year of Study	1st Year	60	13.3%
	2nd Year	30	6.7%
	3rd Year	50	11.1%
	4th Year	80	17.8%
	5th Year	230	51.1%

3.2 Lifestyle and BMI Characteristics

Regarding body mass index (BMI), 55.6% (n=250) were within the normal range (18–24 kg/m²), 24.4% (n=110) were overweight (25–30 kg/m²), 15.6% (n=70) were obese (BMI >30 kg/m²), and 4.4% (n=20) were underweight (BMI <18 kg/m²). In terms of smoking status, 77.8% (n=350) were non-smokers, 17.8% (n=80) were current smokers, and 4.4% (n=20) were ex-smokers. Regarding sleep duration, 62.2% (n=280) slept 5–7 hours per night, 20% (n=90) slept fewer than 5 hours, and 17.8% (n=80) slept more than 7 hours (Table 2).

Table 2. BMI, smoking status, and sleep duration of participants

Variable	Category	Frequency	Percentage (%)
BMI (kg/m ²)	< 18 (Underweight)	20	4.4%
	18–24 (Normal)	250	55.6%
	25–30 (Overweight)	110	24.4%
	> 30 (Obese)	70	15.6%
Smoking Status	Non-smoker	350	77.8%
	Current smoker	80	17.8%
	Ex-smoker	20	4.4%
Sleep Duration	< 5 hours	90	20.0%
	5–7 hours	280	62.2%
	> 7 hours	80	17.8%

3.3 RLS Diagnostic Criteria Responses

Responses to the four essential IRLSSG diagnostic questions are summarized in Table 3. An urge to move the legs accompanied by uncomfortable sensations was reported by 160 (35.6%) participants, with 80 (17.8%) responding 'Maybe' and 210 (46.7%) responding 'No.' Worsening of symptoms during rest was confirmed by 200 (44.4%) participants, with 50 (11.1%) unsure and 200 (44.4%) reporting no such experience. Relief of symptoms by movement was endorsed by 180 (40.0%) participants, 40 (8.9%) were uncertain, and 230 (51.1%) reported no relief. Evening or nocturnal worsening was acknowledged by 140 (31.1%) participants, with 30 (6.7%) unsure and 280 (62.2%) indicating no worsening. Applying the IRLSSG 'Yes to all four criteria' classification, 90 participants (20.0%) were identified as having probable RLS.

Table 3. Responses to IRLSSG diagnostic criteria (n=450)

IRLSSG Diagnostic Criterion	Yes	Maybe	No	% Responding Yes
Urge to move legs + uncomfortable sensations	160	80	210	35.6%
Symptoms begin/worsen during rest or inactivity	200	50	200	44.4%
Symptoms partially/totally relieved by movement	180	40	230	40.0%
Symptoms worse in evening/night	140	30	280	31.1%

3.4 Symptom Severity and Functional Impact

Among the full sample, 220 participants (48.9%) reported no overall RLS symptom severity. Of those with symptoms, 120 (26.7%) had mild severity, 80 (17.8%) moderate, and 30 (6.7%) severe symptoms, yielding a mean overall symptom score of 1.3 (on a 0–5 scale). Regarding symptom frequency, 150 (33.3%) experienced symptoms rarely, 60 (13.3%) often, and 20 (4.4%) very often. In terms of functional impact, 130 (28.9%) reported their daily activities were rarely affected, 50 (11.1%) often affected, and 20 (4.4%) most often affected, with a mean impact score of 0.8 (on a 0–4 scale) (Table 4).

Table 4. RLS symptom severity, frequency, and functional impact

Variable	None	Mild/ Rarely	Moderate/ Often	Severe/ Most Often	Mean Score
Overall RLS symptom severity (0–5 scale)	220	120	80	30	1.3
Symptom frequency	220	150	60	20	—
Impact on daily activities (0–4 scale)	250	130	50	20	0.8

3.5 Family History, Academic Impact, and Interest in RLS Education

A family history of RLS was confirmed by 80 participants (17.8%), with 30 (6.7%) uncertain and 340 (75.6%) reporting no family history. Leg symptoms were reported to adversely affect academic performance or daily activities by 80 students (17.8%), while 120 (26.7%) were uncertain. Notably, 260 participants (57.8%) expressed interest in learning more about managing RLS, while 80 (17.8%) were uncertain and 110 (24.4%) were not interested. Additionally, 110 participants (24.4%) reported at least one concurrent chronic condition (Table 5).

Table 5. Family history, academic impact, and interest in RLS education

Question	Yes	Maybe	No	% Responding Yes
Family history of RLS (parents/siblings/close relatives)	80	30	340	17.8%
Leg symptoms affected academic performance/daily activities	80	120	250	17.8%
Interested in learning RLS management strategies	260	80	110	57.8%

4. DISCUSSION

This study found that 20% of medical students at Jalal-Abad, Kyrgyzstan, met all four essential IRLSSG diagnostic criteria for probable RLS. This prevalence is markedly higher than the 8% reported among medical students in Karachi, Pakistan [4], where cases were predominantly mild to moderate in severity with only mild sleep disruption. Conversely, it closely mirrors the 20.2% prevalence documented in a recent observational study of medical students in Saudi Arabia [6], which also identified significant associations with daytime fatigue, sleep disturbances, smoking, and high caffeine intake.

Compared with broader population estimates for North America and Europe (4–29%) [3], the 20% rate observed in our cohort is consistent with the upper range of general adult prevalence figures and aligns with or exceeds rates reported in other university student populations. Specifically, up to 23% overall prevalence (with 6% persistent symptoms) was documented among Estonian university students [9], 9.9% among Turkish medical students in whom RLS was associated with academic impairment [10], and 2.6% for primary RLS in another Turkish cohort [5]. The variability across studies likely reflects differences in diagnostic tools, population characteristics, and regional lifestyle factors, yet collectively these data suggest that RLS may be substantially more prevalent among academically stressed young adults than general population statistics imply.

In terms of symptom severity, findings in our cohort—predominantly mild to moderate (mean score 1.3 on a 0–5 scale)—are consistent with patterns observed in both the Pakistani [4] and Saudi Arabian [6] medical student studies. Nevertheless, 17.8% of our participants reported that leg symptoms adversely affected academic performance or daily activities, and 31.1% confirmed nocturnal symptom worsening. These figures, alongside the observation that 20% of students slept fewer than five hours nightly, underscore the clinically relevant bidirectional relationship between sleep deprivation and RLS exacerbation. The high proportion of students (57.8%) expressing interest in RLS management education reflects unmet educational needs and constitutes a strong rationale for integrating RLS screening and sleep hygiene instruction into medical training curricula.

A family history of RLS was documented in 17.8% of participants, consistent with the established heritability of the disorder. Self-reported chronic comorbidities—including possible iron-deficiency anemia—were noted in 24.4% of students with RLS, while modifiable risk factors such as current smoking (17.8%) and short sleep duration (20% sleeping <5 hours) were prevalent and represent actionable targets for intervention. These findings align with the Saudi Arabian study [6], which identified iron deficiency, smoking, and high caffeine consumption as significant RLS-associated factors in a similar academic population.

The present study addresses an important epidemiological gap in Central Asia, where published RLS data from medical student populations are virtually absent. Regional factors specific to Kyrgyzstan—including dietary patterns, environmental stressors, and genetic predispositions—may contribute to the observed prevalence in ways that differ from Western or South Asian settings, and warrant further investigation through multi-center, clinically validated research.

5. CONCLUSION

This cross-sectional study establishes a 20% prevalence of probable RLS among undergraduate medical students in Jalal-Abad, Kyrgyzstan—comparable to recent findings from Saudi Arabia and exceeding earlier reports from Pakistan. Symptoms were predominantly mild to moderate; however, they were associated with meaningful sleep disruption, daytime

impairment, and self-reported academic impact. The high proportion of students interested in RLS management education highlights a significant unmet need and a clear opportunity for intervention within medical training programs.

These findings fill an important epidemiological gap in Central Asia and emphasize that RLS should not be overlooked in young, high-achieving populations such as medical trainees. Implementing validated screening tools, integrating sleep hygiene education and RLS awareness into the medical curriculum, and addressing modifiable risk factors—including short sleep duration, smoking, and probable iron deficiency—have the potential to substantially improve student well-being, cognitive performance, and long-term professional resilience. Multi-center, clinically validated research across Kyrgyzstan and neighboring Central Asian countries is strongly recommended to further characterize the regional burden of RLS and to inform targeted neurological health initiatives for future healthcare professionals.

REFERENCES

1. Alabdulqader, R., Alqahtani, R., Alsunaikh, K., Almousa, S., Alsalem, A., & Alokley, A. (2025). Prevalence and risk factors of restless legs syndrome among medical students in Saudi Arabia: An observational study. *Annals of African Medicine*, 24(2), 421–426. https://doi.org/10.4103/aam.aam_232_24
2. Al-Hunaiti, T., Ashour, L., Jamal, B., Abu Sirhan, L. A., Iqnaibi, R., Abdel Hafez, R., Alrawajfeh, N., Alsouri, M., & Funjan, K. (2024). Restless legs syndrome and its associated factors among Jordanian medical students: A cross-sectional study. *East Asian Archives of Psychiatry*, 34(3), 82–86. <https://doi.org/10.12809/eaap2422>
3. AlShareef, S. M. (2023). The prevalence of and risk factors for restless legs syndrome: A nationwide study. *Frontiers in Psychiatry*, 13, Article 987689. <https://doi.org/10.3389/fpsyt.2022.987689>
4. Ishaq, M., Khan, A., Khan, S., & Khan, M. (2020). Prevalence of restless legs syndrome among medical students of Karachi, Pakistan. *Journal of Ayub Medical College Abbottabad*, 32(1), 123–127. <https://pubmed.ncbi.nlm.nih.gov/32148967/>
5. Cigdem, B., Gokce, G., et al. (2025). The prevalence of restless legs syndrome among university students: A single-centre study. *Acta Neurologica Belgica*, 125(6), 1561–1566. <https://doi.org/10.1007/s13760-025-02875-z>
6. Alabdulqader, R., Alqahtani, R., Alsunaikh, K., Almousa, S., Alsalem, A., & Alokley, A. (2025). [See reference 1 above — cited as the Saudi Arabia observational study.]
7. Shalash, A. S., Elrassas, H. H., Monzem, M. M., Salem, H. H., Moneim, A. A., & El-Tantawy, A. M. (2015). Restless legs syndrome in Egyptian medical students using a validated Arabic version of the Restless Legs Syndrome Rating Scale. *Sleep Medicine*, 16(12), 1528–1531. <https://doi.org/10.1016/j.sleep.2015.07.015>
8. Al-Hunaiti, T., et al. (2024). [See reference 2 above — cited as the Jordanian medical students study.]
9. Virolainen, S., Kuusimäki, T., & Partinen, M. (2014). Restless legs syndrome – Prevalence and associated factors among university students in Estonia. *Sleep Medicine*, 15(Suppl 1), e209. <https://doi.org/10.1016/j.sleep.2013.11.512>
10. Yon, M. I., Akdeniz, G., Sen, A. B., Bozkus, E., & Yoldas, T. K. (2020). Prevalence of restless legs syndrome among medical students and the effect of the disease on academic performance. *Annals of Medical Research*, 27(1), 74–78. <https://doi.org/10.5455/annalsmedres.2019.12.2019.12.583>

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