
RESEARCH ARTICLE

Prevalence and Associated Factors of Restless Leg Syndrome.

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ABSTRACT

To assess the prevalence and factors associated with restless leg syndrome among the students at Gulf Medical University. A cross-sectional study was conducted in Gulf Medical University (GMU), Ajman, UAE, upon approval from the Ethics Committee. A self-administered questionnaire was given to gather information from 624 students about Restless Legs Syndrome (RLS), covering things like age, gender, and factors associated with it. Among the students (164 boys and 452 girls), we found that 6.2% had restless leg syndrome. The results of the study showed a connection between restless leg syndrome and factors such as magnesium deficiency, vitamin B12 deficiency, anemia, and sleep disturbance. We did not find a significant link between age and restless leg syndrome in our study, as we focused on people aged 18 and older. In conclusion, we identified the most common factors connected to restless leg syndrome, including low magnesium, low vitamin B12, anemia, and sleep problems. These findings highlight that restless leg syndrome is complex and can affect young adults, with certain nutritional and lifestyle factors playing a role in its occurrence.

KEYWORDS

Restless leg syndrome, prevalence, factors, students, Ajman.

ARTICLE INFORMATION

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1. Introduction

Restless Legs Syndrome (RLS), also referred to as Willis-Ekbom disease, is a prevalent and persistent movement disorder affecting the limbs. Individuals experiencing RLS feel an uncontrollable compulsion to move their legs, often accompanied by unusual and painless sensations of tingling, cramping that begin when at rest and alleviate with activity. Symptoms tend to worsen nocturnally, leading to sleep disturbances. Additionally, RLS is associated with involuntary leg movements while asleep, recognized as periodic leg movements of sleep. (Mansur, 2024)

Restless Legs Syndrome (RLS) is unfortunately often under-diagnosed in clinical settings. The restlessness associated with RLS can contribute to the development of other sleep disorders like insomnia and excessive daytime sleepiness. In its severe manifestations, RLS becomes a persistent and debilitating condition that necessitates long-term treatment. While there is no cure for this syndrome, clinical management aims to address potential causes and explore various medications for symptomatic relief. (Allen, 2005)

A recent research study was undertaken to investigate the descriptive and analytic epidemiology of restless legs syndrome (RLS) in the elderly Greek population, placing a particular emphasis on lifestyle indicators. Out of 1,838 eligible participants, 133 were diagnosed with RLS. The mean age-sex standardized prevalence of RLS in the elderly was calculated at 6.1%, with a female-to-male ratio of 2.1. Positive associations were identified between RLS and female sex, anxiety levels, and traumatic brain injury, reaffirming prior research findings. (Liampas, 2023)

Furthermore, the study uncovered that good sleep quality was linked to 55% reduction in the likelihood of RLS compared to both poor and moderate quality. For the first time in research, an association was discovered between restless leg syndrome and adherence to the Mediterranean dietary pattern and low daily energy intake. (Liampas,2023)

The prevalence of Restless Legs Syndrome (RLS) in the general population ranges from 3.9 to 14.3%. (Ohayon, 2012) However, locally, there is lack of prevalence data in the region. The aim of our research is to estimate the prevalence of RLS and its associated factors among young university students in Ajman, specifically those from Gulf Medical University (GMU), through the utilization of a self-administered questionnaire.

2. Literature Review

There is substantial evidence for a higher prevalence of vitamin D deficiency in adults with RLS. Within the general population of adults with RLS, a recent meta-analysis including 12 studies related to RLS demonstrated a significant association between serum 25(OH)D levels and the presence of RLS, whereby serum levels of 25(OH)D were significantly lower in 593 people with RLS compared with 1588 controls without RLS. (Cederberg, 2023)

The data show an inverse association between vitamin D levels and RLS. Therefore, vitamin D deficiency should be considered in the management of patients with RLS. (Wali,2018)

Results from a large cohort of pregnant women in the USA suggest that RLS is strongly associated with poor sleep quality, excessive daytime sleepiness, and poor daytime function, which are common symptoms frequently attributed to pregnancy. Screening and identification of RLS in pregnancy may alleviate the burden of symptoms in the majority of cases. (Dunietz,2017)

RLS occurred at significantly higher rates among anemic patients than healthy participants. RLS severity did not correlate with the severity of iron deficiency. (Sunand,2006)

The REST general population study was conducted in the United States and 5 European countries (France, Germany, Italy, Spain, and the United Kingdom). It was found that although the prevalence of RLS sufferers increases with age, RLS sufferers of all ages were present. Indeed, 36.1% of the RLS sufferers were 49 years or younger. (Allen,2005)

A cohort study in the US showed that obesity was associated with a higher likelihood of having RLS in women and men and the prevalence increased progressively with increasing BMI and waist circumference. (Gao X, 2009) Many studies have demonstrated that sleep disturbances are a key consequence, and often the most troublesome symptom, of RLS. Thus, sleep problems are commonly reported by patients with both primary and secondary RLS. (Bogan RK, 2006)

The study provides a complete systematic examination of the risk of RLS among relatives of RLS probands and controls using the same assessment methodology. Although the results are consistent with a genetic etiology for RLS, they do not support the presence of one simple, Mendelian-inherited major gene in most RLS families. (Allen RP, 2002)

Caffeine is responsible for the increased nervous system arousal as well as for the direct peripheral contractile effect on the striated muscle. This arousal is often reflected psychologically in anxiety and sometimes depressive manifestations, insomnia, heightened proprioceptive awareness and physiologically in the toxic sensory experience of restless legs associated with increased neuromuscular reactivity, which may include myoclonus and myokomia. (Lutz EG, 1978)

3. Methodology

3.1 Research design : Cross-sectional study.

Study population : Gulf Medical University (GMU) students.

- **Inclusion criteria** : GMU students who were above 18 years of age and signed the informed consent form.
- **Exclusion criteria** : : Students who did not sign the consent form, and who were below the age of 18 years old.

Study setting : Gulf Medical University, Ajman

Duration of study : 6 months

3.2 Study instrument and validation procedure :

A self-administered questionnaire was used to gather the necessary data about the prevalence and factors associated with restless leg syndrome. The ethics committee approved the proposal before the study was conducted.

3.3 Ethical issues :

The proposal was submitted to the Institutional Review Board (IRB) of Gulf Medical University and was reviewed by them. After approval was obtained, the participants were informed about the purpose of our study, and the necessary voluntary consent was obtained prior to their participation. According to the research policy of GMU, only members of IRB, the researchers and the statistician had access to the data thereby maintaining confidentiality.

3.4 Methodology :

Students from different colleges of GMU participated in our research project. The objective of our research was explained to the students, and the questionnaire and consent form were distributed among them. There was no cost for participation. Any queries or doubts pertaining to the research were clarified by the investigators. The filled in questionnaire were carefully checked by the researchers to minimize the likelihood of missing information.

3.5 Data analysis :

The data was analyzed using SPSS software. Descriptive statistics were calculated to determine the prevalence. The factors associated with restless leg syndrome were identified by using Chi-Square test.

4. Results and Discussion

4.1 Prevalence of restless leg syndrome

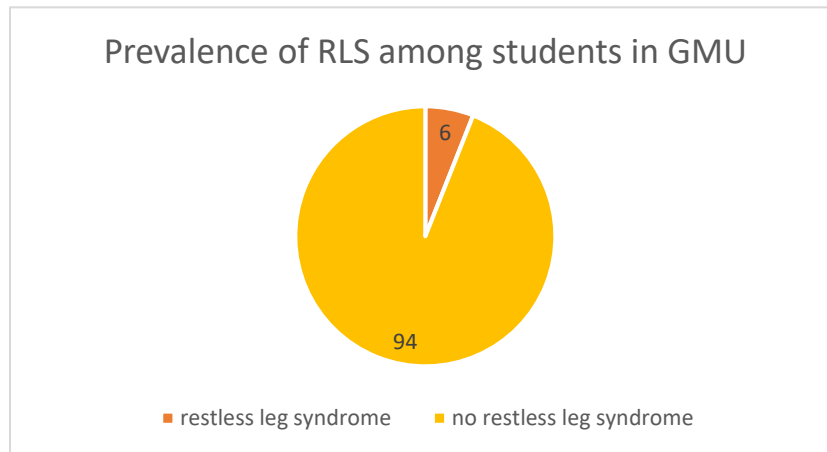


Figure 1 : Distrubition of restless leg syndrome symptoms among students

In our investigation, we noted that the prevalence of Restless Legs Syndrome (RLS) among the surveyed student population was observed to be 6.2%, with approximately 38 individuals affected.

4.2 Prior knowledge about restless leg syndrome

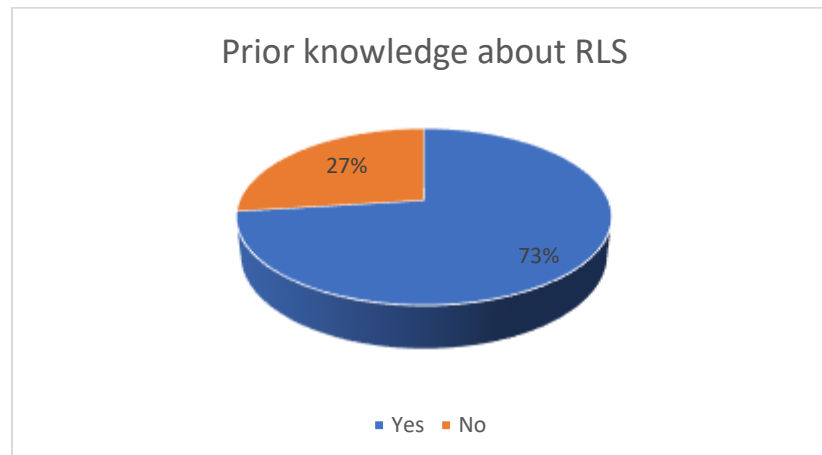


Figure 2- Prior knowledge about restless leg syndrome (RLS)

Our study indicated that 73% of the participants were already familiar with restless leg syndrome, while 27% had no prior knowledge of the condition.

4.3 History of sleep problems in students with restless leg syndrome symptoms

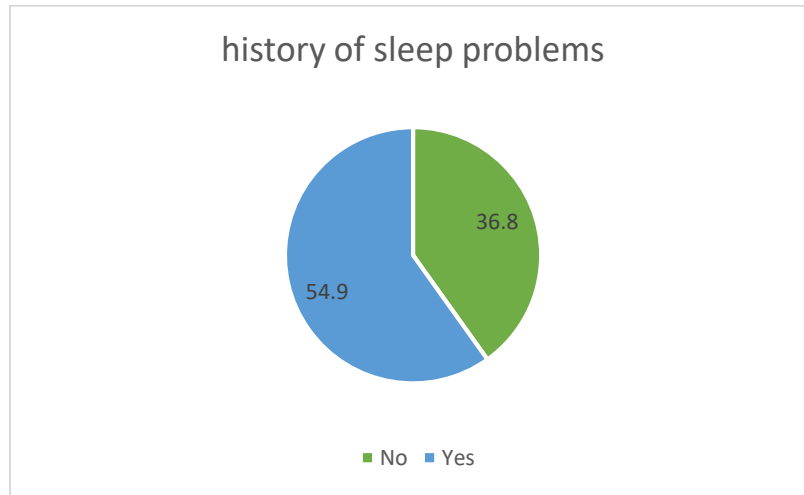


Figure 3: distribution of students with restless leg syndrome who had history of sleep problems

Our study revealed that 54.9% of students exhibiting symptoms of restless leg syndrome also reported a history of sleep problems.

When asked about the specific nature of their sleep issues, the majority of respondents, 54 individuals (78.3%), reported uncertainty regarding the type. A smaller proportion cited back pain (3 individuals, 4.3%), stress (2 individuals, 2.9%), muscle cramps (5 individuals, 7.2%), sleep paralysis (1 individual, 1.4%), arthritis (3 individuals, 4.3%), and pain (1 individual, 1.4%) as contributing factors.

4.4 Other diseases associated with restless leg syndrome

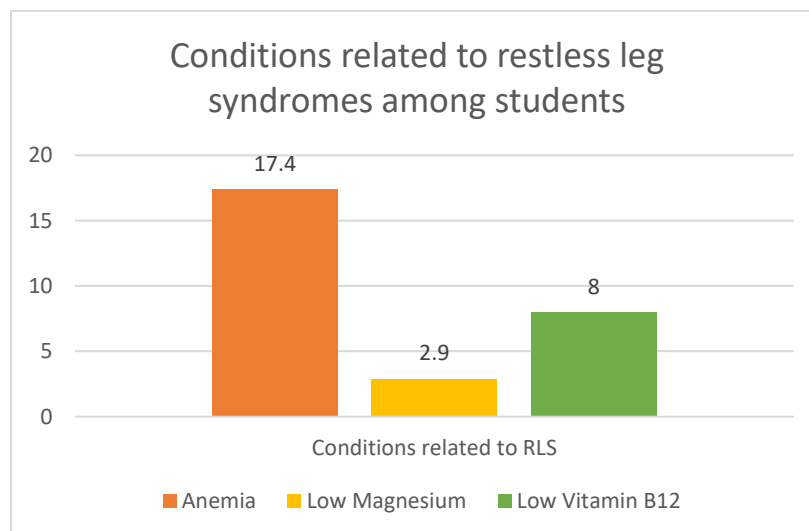


Figure 4 : Graph showing conditions associated with RLS

Prevalence and Associated Factors of Restless Leg Syndrome.

Variable	Group	RLS				P	
		Yes		No			Total
		No.	%	No.	%		
Low magnesium	Yes	13	72.2	5	27.8	18	0.004
	No	225	38.5	360	61.5		
Low vitamin B12	Yes	29	59.2	20	40.8	49	0.003
	No	209	37.7	345	62.3		
Anemia	Yes	51	48.1	55	51.9	106	0.045
	No	187	37.6	310	62.4		

Table no.1 Participants with conditions related to RLS.

Our study revealed a significant correlation between restless leg syndrome (RLS) and several comorbidities among students. Foremost among these associated conditions were anemia, low magnesium levels, and vitamin B12 deficiency.

5. Discussion

In our investigation, it was noted that the prevalence of restless leg syndrome (RLS) among surveyed students was approximately 6.2%. Regarding the frequency of RLS symptoms, 11% of students experienced mild symptoms, 16% reported moderate symptoms, 7.4% had severe symptoms, and 6.6% described their symptoms as very severe. Our findings are consistent with research sourced from articles obtained from the PubMed database, which covered various aspects of RLS including gene variants, pathophysiology, and treatment methods, indicating that roughly 15% of the global population suffers from RLS. (Memon, 2020). Additionally, a study conducted on the correlation between RLS and sleep quality among the general population in Mangalore, India, revealed a prevalence of 11.9% among 202 participants, with 5 individuals already diagnosed with RLS. (Joseph, 2022)

In our study, in 2.9% of cases individuals diagnosed with restless legs syndrome (RLS) also exhibited low levels of magnesium. Research suggests that magnesium could play a significant role in the development of RLS/WED, as investigations have demonstrated that individuals with RLS/WED tend to have lower magnesium levels in comparison to those without the condition. A single-blind study was conducted for three months on individuals with this restless leg syndrome Seventy-five patients were randomly assigned to three groups: magnesium, vitamin B6, and placebo. The experimental groups received daily doses of either 40 mg of vitamin B6 or 250 mg of magnesium oxide, while the control group received a placebo. Results indicated that magnesium and vitamin B6 supplementation over two months reduced RLS/WED symptoms and improved sleep quality. (Jadidi, 2022). Another research indicated that magnesium therapy can reduce the severity of symptoms associated with this condition and enhance the sleep quality of patients. These findings suggest that magnesium could be a suitable alternative for treating individuals with RLS/WED. (Yıldırım, 2021)x. A case report involves a woman who had been experiencing restless legs syndrome (RLS) for 13 years. During a period of bed rest prescribed for preterm labor at 26 weeks of pregnancy, the subject experienced severe RLS symptoms while at rest. Subsequently, she was hospitalized for preterm labor and received intravenous magnesium sulfate as (Bartell 2006).

Our study revealed that among the 106 students diagnosed with anemia, 48.1% of them also experienced symptoms associated with restless legs syndrome (RLS). Anemia in RLS has been well established by many studies. A study done in St John’s Medical College Hospital in Turkey showed that among the 64 patients with iron deficiency anemia, 34.37% of them also suffered from RLS. (Sunad, 2006). A randomized, double-blinded, placebo-controlled study showed that administering 1500 mg of ferric carboxymaltose (FCM) effectively alleviates symptoms of restless legs syndrome (RLS) in patients with iron deficiency anemia (IDA) within a six-week period. Additionally, MRI measurements indicating enhanced brain iron content could serve as a promising biomarker for RLS patients. (Bae, 2021)

In our study, it was observed that approximately 54.9% of individuals with restless legs syndrome (RLS) had a history of sleep problems, indicating a notable association between RLS and sleep-related issues. Two population surveys conducted in Sweden have investigated the prevalence of RLS and its impact on sleep. In a survey, sleep complaints were more frequent among those who met the diagnostic criteria for RLS, than those who did not. In addition, those with RLS reported more problems in initiating and maintaining sleep and more disturbed sleep. Similar problems of insomnia were also reported from a survey from the same region. (Bryndin, 2010). Sleep difficulties are highly prevalent among individuals with restless legs syndrome (RLS). These disruptions in sleep may stem from both the sensory symptoms associated with RLS and the occurrence of periodic leg movements

(PLMs) and periodic limb movements during wakefulness (PLMW). The conventional treatment for primary RLS, dopamine agonist therapy, has been shown to enhance both subjective sleep disturbances and objective measures of sleep, as well as reduce PLMs. (Bogan, 2006)

In our study, it was found that 59.2% of individuals with restless legs syndrome (RLS) also had a deficiency in vitamin B12. A study retrospectively examined the serum vitamin B12 levels of 80 patients diagnosed with RLS alongside 80 healthy controls matched for age and gender. Patients with RLS displayed a notable deficiency in vitamin B12 compared to the healthy control group. This deficiency was found to have a significant impact on the severity of RLS symptoms and symptoms of depression. (Geng, 2022)

6. Conclusion

Our study revealed a 6.2% prevalence of Restless Leg Syndrome (RLS) among GMU students, with a higher occurrence in women. Factors associated with RLS include anemia, magnesium deficiency, and vitamin B12 deficiency. Individuals with RLS often experience sleep disturbance.

The implications of this research extend beyond mere prevalence figures. By understanding the factors linked to RLS in a university setting, healthcare practitioners, educators, and students themselves can benefit. For instance, awareness campaigns, targeted screenings, and educational programs can be developed to address the specific needs of high-risk groups, such as overweight individuals and those with sleep-related issues.

Looking ahead, future research may delve deeper into effective intervention strategies, exploring how lifestyle modifications, improved sleep hygiene, and nutritional interventions might mitigate the impact of RLS. Longitudinal studies could provide valuable insights into the progression of RLS and its potential consequences on academic performance and overall well-being among students.

In summary, this research not only sheds light on the prevalence and factors associated with RLS in a university population but also opens avenues for practical applications in health promotion and targeted interventions. The findings serve as a foundation for future studies aiming to enhance our understanding of RLS and improve the well-being of students.

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Conflicts of Interest: The authors declare no conflict of interest.

Ethical approval: This study has been approved by the Institutional Review Board (IRB) of Gulf Medical University.

Informed consent: All participants were informed of the purpose of our study, and all participants gave voluntary consent prior to participation.

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