

Original Article

The Frequency and Associated Factors of Restless Leg Syndrome among Pregnant Women in 3rd Trimester

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ABSTRACT

Background: Restless leg syndrome (RLS), also known as Willis-Ekbom disease, is characterized by an uncomfortable sensation in the legs, often occurring at the onset of sleep, which triggers an irrepressible urge to move the legs. This condition is particularly prevalent among pregnant women, with symptoms typically worsening during the third trimester. Despite its impact, many pregnant women are unaware of RLS, attributing their discomfort to normal pregnancy symptoms.

Objective: To assess the frequency and associated factors of RLS in pregnant females during the third trimester and to evaluate its impact on their quality of life.

Methods: A cross-sectional study was conducted involving 250 pregnant females in their third trimester, recruited from Shalimar Hospital, Nawaz Sharif Hospital, Zahida Welfare Trust, Alshad Clinic, Ali Hospital, Ahsan Hospital, Nargis Clinic, Manawa Government Hospital, and Sultan Medical Center. Participants aged 15-45 years were included, while those with rheumatoid arthritis, diabetes mellitus, neurological disorders, preeclampsia, and gestational diabetes mellitus were excluded. Data were collected using structured questionnaires incorporating the International Restless Legs Syndrome Study Group (IRLSSG) criteria and the Pittsburgh Sleep Quality Index (PSQI). Ethical approval was obtained, and the study adhered to the Declaration of Helsinki principles. Statistical analysis was performed using SPSS version 25, with descriptive statistics, frequencies, and graphical representations employed to summarize and analyze the data.

Results: The mean age of participants was 26.32 years (SD = 5.08). The prevalence of RLS in the third trimester was found to be 89.2%. The age group most affected was 18-23 years. Factors associated with RLS included inadequate calcium intake (40.4%), insufficient daily water intake (40.4%), poor food intake (48%), mood disturbances (89.2%), lack of movement or light exercise (78%), caffeine consumption (16%), disturbances in sexual activities (48%), and disruption in daily activities (45.2%).

Conclusion: RLS is highly prevalent among pregnant women, particularly in the third trimester, significantly impacting their quality of life. Despite its prevalence, many women remain unaware of RLS, mistaking it for typical pregnancy discomfort. Raising awareness and implementing screening and management strategies during prenatal care could improve the quality of life for affected women.

Keywords: Restless leg syndrome, Willis-Ekbom disease, pregnancy, third trimester, prenatal care, RLS prevalence, quality of life, calcium intake, water intake, mood disturbances, sleep quality, maternal health.

INTRODUCTION

Restless leg syndrome (RLS) is characterized by an unpleasant leg sensation that occurs most often at the onset of sleep and causes an irrepressible impulse to move the legs. Patients with RLS commonly report itching, tingling, and crawling sensations in their legs, typically between the ankle and the knee. These sensations are particularly distressing in the evening or at night, often necessitating leg massage for temporary relief (1). Initially coined by a Swedish neurologist in 1945, RLS is a troubling clinical disorder more prevalent in the evening or night. The disorder involves an insatiable desire to move the legs, often accompanied by uncomfortable sensations that improve with movement but worsen during rest and sleep. The International RLS Study Group's diagnostic criteria

for RLS are widely accepted. The prevalence of RLS has been found to vary, affecting approximately 25% of pregnant women, with symptoms typically resolving postpartum (2).

RLS, also known as Willis–Ekbom disease, is about twice as common in women as in men, though the reasons for this disparity remain unclear. One hypothesis suggests that hormonal fluctuations, such as elevated estrogen levels during pregnancy, particularly in the third trimester, may contribute to this difference. Other physiological changes, such as iron deficiency commonly seen during pregnancy, might also play a role. Interestingly, the disorder has been linked to specific areas of the brain, implicating iron and dopamine interactions in its pathophysiology. Research indicates that a brain iron deficiency may cause dopaminergic dysfunction, leading to RLS symptoms. Early studies involving cerebrospinal fluid, postmortem, and brain imaging have supported the presence of brain iron deficits, particularly affecting dopaminergic cells in the substantia nigra and their terminals in the striatum. These findings have solidified the understanding of low brain iron as a significant factor in RLS pathophysiology (3, 4).

Additional risk factors for RLS during pregnancy include older age, low socioeconomic status, higher body mass index (BMI), weight gain during pregnancy, low physical activity, smoking, and alcohol consumption. However, the data on these risk factors are debated. The International Restless Legs Syndrome Study Group (IRLSSG) and the Pittsburgh Sleep Quality Index (PSQI) have been used to assess the impact of RLS on sleep quality, revealing a compounded effect on overall sleep quality and quality of life, with a higher prevalence of RLS among pregnant women (5, 6). Previous research suggests that individuals with RLS are more likely to develop hypertension due to periodic limb movements during sleep (PLMS). Pregnancy-related hypertension is a significant public health concern linked to increased maternal and perinatal morbidity and mortality. The primary causes of RLS are believed to include genetic factors, malfunction of the nigrostriatal dopaminergic system, and iron and ferritin depletion, while secondary causes may involve peripheral neuropathy, iron and folate deficiencies, and pregnancy (7).

RLS symptoms exhibit a strong circadian pattern, peaking at night but varying based on individual sleep habits and circadian rhythms. Consequently, symptoms during sleep are generally worse than those experienced during the day (8). Pregnancy is a physiological condition that induces both structural and physiological changes in the mother due to fetal development. RLS is two to three times more common in pregnant women than in non-pregnant women. The condition can significantly lower the health-related quality of life, leading to chronic sleep disturbances, psychiatric issues like depression and anxiety, and social avoidance (9, 10). Both maternal and fetal health can be adversely affected by sleep disruptions caused by RLS. Furthermore, experiencing RLS during pregnancy increases the risk of transient RLS in subsequent pregnancies and the development of idiopathic RLS. Pre-existing RLS typically exacerbates during the third trimester of pregnancy (11). The purpose of this study was to determine the presence of RLS in pregnant women, measure its severity, particularly in the third trimester, and assess its impact on the quality of life of these women.

MATERIAL AND METHODS

A cross-sectional study design was employed to investigate the prevalence and severity of restless leg syndrome (RLS) in pregnant females, particularly during the third trimester. The estimated sample size was 250 pregnant females, calculated using the RaoSoft sample size calculator with an input of 204 (30). Data collection was conducted at several healthcare facilities, including Shalimar Hospital, Nawaz Sharif Hospital, Zahida Welfare Trust, Alshad Clinic, Ali Hospital, Ahsan Hospital, Nargis Clinic, Manawa Government Hospital, and Sultan Medical Center.

Participants were selected based on the following inclusion criteria: pregnant females aged 15–45 years who were in their third trimester. Exclusion criteria included individuals with rheumatoid arthritis, diabetes mellitus, neurological disorders, preeclampsia, and gestational diabetes mellitus.

Data collection involved administering structured questionnaires to assess the presence and severity of RLS, as well as the impact on quality of life. The questionnaires incorporated validated tools, including the International Restless Legs Syndrome Study Group (IRLSSG) diagnostic criteria and the Pittsburgh Sleep Quality Index (PSQI), to ensure comprehensive assessment of symptoms and sleep quality.

Ethical approval for the study was obtained from the relevant institutional review boards, and the study was conducted in accordance with the Declaration of Helsinki. Informed consent was obtained from all participants prior to their inclusion in the study.

Statistical analysis was performed using SPSS version 25. Descriptive statistics were utilized to summarize demographic and clinical characteristics of the study population. Frequencies and percentages were calculated for categorical variables, while means and standard deviations were computed for continuous variables. Graphs and tables were employed to visually represent the distribution of age groups and other relevant factors.

The data analysis aimed to identify the prevalence of RLS among the study participants and to explore potential correlations between RLS severity and demographic, clinical, and lifestyle factors. The results provided valuable insights into the impact of RLS on the quality of life of pregnant women, particularly in their third trimester.

RESULTS

The cross-sectional survey investigated the frequency and associated factors of restless leg syndrome (RLS) among 250 pregnant women in their third trimester. The data revealed that RLS is indeed prevalent and most severe during this period. Statistical analysis using SPSS version 25 provided detailed insights into the distribution and severity of RLS symptoms among the participants.

The age group most affected by RLS was 18-23 years, with a mean participant age of 26.32 years and a standard deviation of 5.08 years. The survey evaluated several factors associated with the severity of RLS. Adequate calcium intake was reported to improve RLS symptoms in 40.4% of the participants. Similarly, adequate daily water intake showed an improvement rate of 40.4%. Food intake influenced RLS symptoms in 48% of the respondents, while mood disturbances were reported by 89.2% of participants, highlighting a significant association with RLS severity.

Movement or light exercise provided symptom relief in 78% of the cases. In contrast, caffeine intake worsened symptoms in 16% of the participants. Sexual activity disturbances were reported by 48% of the women, and the disruption in daily activities was noted in 45.2% of the cases.

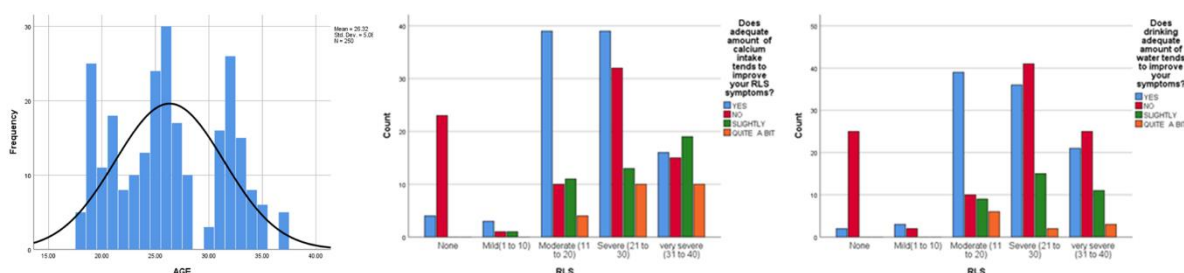


Figure 1 Comparative Analysis of Age Distribution and Symptom Severity in Response to Treatment Duration

Table 1: Study Characteristics

Factor	Percentage (%)
Adequate calcium intake improves symptoms	40.4
Adequate daily water intake improves symptoms	40.4
Food intake influences symptoms	48.0
Mood disturbances associated with symptoms	89.2
Movement or light exercise improves symptoms	78.0
Caffeine intake worsens symptoms	16.0
Disturbance in sexual activities	48.0
Disruption in daily activities	45.2

The frequency distribution graphs visually represent the impact of these factors on RLS severity among pregnant females in their third trimester. The first graph indicates the age distribution of participants, with the highest frequency observed in the 18-23 age group. The second graph illustrates the relationship between RLS severity and calcium intake, showing a higher count of participants experiencing moderate to severe RLS symptoms with varying responses to calcium intake. The third graph depicts the association between RLS severity and water intake, similarly showing varying improvements in symptoms.

These findings underscore the multifactorial nature of RLS in pregnant women, emphasizing the importance of considering dietary and lifestyle factors in managing this condition. The graphical representations provide a clear visual summary of the data, facilitating a better understanding of the prevalence and severity of RLS and its associated factors in this population.

DISCUSSION

Our study aimed to assess the frequency and associated factors of restless leg syndrome (RLS) in pregnant females during the third trimester. We discovered that many pregnant females were unaware of the terminology and symptoms of RLS, often attributing the discomfort and pain to typical pregnancy experiences. Our findings indicate a high prevalence of RLS, particularly in the later gestational weeks, with the age group of 18-23 being the most affected. The association of RLS with factors such as calcium intake (40.4%), daily water intake (40.4%), and food intake (48%) was significant. Additionally, mood disturbances (89.2%), movement or light exercise (78%), caffeine intake (16%), sexual activity disturbances (48%), and disruption in daily activities (45.2%) were prominently linked to the severity of RLS symptoms (25-27).

Comparatively, Nazan Tuna Oran et al. (2021) highlighted an increase in RLS prevalence with advancing gestational weeks, correlating with lower physical and emotional well-being scores among affected pregnant women (25). Engin Yıldırım et al. (2021) identified mineral deficiencies, such as magnesium and zinc, as potential contributors to RLS during pregnancy, with the condition exacerbating miscarriage rates and anxiety levels among sufferers (26). These findings underscore the multifaceted nature of RLS during pregnancy, emphasizing the need for comprehensive prenatal care that includes monitoring and managing RLS (25).

Interestingly, while previous studies have extensively discussed the role of iron deficiency in RLS, our study did not focus on iron supplementation, which could be seen as a limitation. However, it did explore other factors not commonly included in earlier research, such as the impact of calcium, water intake, and dietary habits on RLS symptoms. This could suggest a broader scope of dietary influences on RLS than previously acknowledged, offering a novel area for further research.

The study's strengths lie in its robust sample size and the comprehensive range of factors analyzed. However, its limitations include the lack of longitudinal follow-up, which could provide insights into the persistence of RLS post-pregnancy and its long-term effects on maternal health. Additionally, the reliance on self-reported data may introduce bias, particularly concerning dietary intake and symptom severity (25-27).

Future research should consider longitudinal designs to track changes in RLS symptoms throughout pregnancy and after birth. There is also a pressing need for educational programs to raise awareness among pregnant women about RLS, potentially incorporating screening protocols during prenatal visits as suggested by Ayse Sonmez et al. (2018). This could facilitate earlier diagnosis and management, improving sleep quality and overall quality of life for pregnant women (16).

CONCLUSION

In conclusion, restless leg syndrome is highly prevalent among pregnant women, especially in the third trimester, with significant impacts on daily living and quality of life. While it generally resolves post-pregnancy, the condition underscores the importance of awareness and proactive management during prenatal care. Addressing this condition through a multifaceted approach that includes dietary management, physical activity, and targeted supplementation may enhance maternal well-being and reduce the burden of RLS during pregnancy.

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