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Prevalence of Restless Leg Syndrome and Its Severity on Quality of Life in House Wives

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ABSTRACT

Background: *Restless Legs Syndrome (RLS) is a neurological sensorimotor disorder that disrupts sleep and daily functioning and is associated with impaired quality of life (QOL), yet evidence in non-working women engaged in domestic labor remains limited.* ***Objective:*** *To quantify the distribution of RLS symptom severity and evaluate its association with overall QOL among symptomatic housewives in Sialkot, Pakistan.* ***Methods:*** *A cross-sectional observational study was conducted among 367 symptomatic housewives aged 25–40 years selected by convenience sampling. RLS severity was measured using the International Restless Legs Syndrome Rating Scale (IRLS; range 0–40), categorized as none (0), mild (1–10), moderate (11–20), severe (21–30), and very severe (31–40). QOL was assessed using the WHOQOL-BREF total score. Associations between categorical variables were tested using chi-square with effect size (Cramer's V), and linear regression evaluated the relationship between IRLS score and QOL.* ***Results:*** *The mean age was 32.41 ± 4.95 years. Mean IRLS score was 18.15 ± 8.12 and mean QOL score was 86.59 ± 12.77. RLS severity distribution was none 3.5%, mild 13.6%, moderate 42.2%, severe 36.2%, and very severe 4.4%. RLS severity category was significantly associated with QOL category ($\chi^2 = 93.18$, $df = 12$, $p < 0.001$; Cramer's $V = 0.29$). In regression, higher IRLS scores predicted lower QOL ($B = -0.75$; 95% CI -0.89 to -0.60; $\beta = -0.48$; $R^2 = 0.226$; $p < 0.001$).* ***Conclusion:*** *Among symptomatic housewives, moderate-to-severe RLS burden was common and higher symptom severity was strongly associated with reduced quality of life, supporting the need for early identification and management in this high-burden group.*

Keywords: *Restless Legs Syndrome; Willis–Ekbom disease; Housewives; Symptom severity; Quality of life; WHOQOL-BREF; Cross-sectional study*

INTRODUCTION

Restless Legs Syndrome (RLS), also known as Willis–Ekbom disease, is a chronic neurological sensorimotor disorder characterized by an uncontrollable urge to move the legs, usually accompanied by uncomfortable sensations such as tingling, crawling, or aching. These symptoms typically worsen during periods of rest or inactivity, are more pronounced in the evening or at night, and are partially or completely relieved by movement, leading to significant sleep disruption and daytime impairment (1). RLS was first described by Sir Thomas Willis in the seventeenth century and later clinically characterized by Ekbom as a distinct neurological condition (2). The International Restless Legs Syndrome Study Group (IRLSSG) formalized diagnostic criteria in 1995 and updated them in 2014, which substantially improved recognition and research standardization of the disorder (3).

Globally, RLS affects approximately 4–15% of the adult population, with considerable variation across regions, study designs, and diagnostic approaches (4). Epidemiological studies consistently demonstrate a higher burden among women, with prevalence estimates suggesting women are affected up to three times more frequently than men (5). Although the exact pathophysiology of RLS remains incompletely understood, growing evidence implicates central dopaminergic dysfunction, impaired iron metabolism in the brain, and genetic susceptibility as key contributing mechanisms (6). RLS may occur as a primary

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idiopathic condition or secondarily in association with pregnancy, iron deficiency, chronic kidney disease, and other medical conditions (7).

Beyond its neurological features, RLS is increasingly recognized as a disorder with substantial consequences for quality of life (QOL). Persistent nocturnal symptoms lead to fragmented sleep, chronic fatigue, impaired concentration, mood disturbances, and reduced functional capacity, which collectively interfere with daily activities and psychosocial well-being (8). Several studies have demonstrated that increasing RLS severity is associated with poorer physical, psychological, and social health outcomes, as well as higher rates of anxiety and depression (9). As a result, RLS imposes a considerable individual, social, and economic burden, particularly when underdiagnosed or inadequately managed (10).

Most existing research on RLS has focused on clinical populations, students, or occupational groups such as healthcare workers, medical students, and university students (11–13). These studies, while valuable, may not fully capture the impact of RLS on populations engaged in unpaid domestic labor. Housewives represent a distinct and potentially vulnerable group, as they often perform physically demanding, repetitive tasks, experience disrupted sleep schedules, and have limited access to routine healthcare and preventive screening. In low- and middle-income countries, including Pakistan, housewives may also be exposed to additional risk factors such as nutritional deficiencies, multiparity, chronic stress, and reduced opportunities for physical activity, all of which may exacerbate RLS symptoms (14).

Despite these considerations, there is a notable lack of empirical data examining the burden of RLS symptoms and their impact on quality of life among housewives. Available prevalence estimates from the general population or student-based samples cannot be directly extrapolated to this group due to differences in lifestyle, workload, and health-seeking behavior (4,11). Moreover, while several studies have demonstrated a negative association between RLS severity and quality of life, limited research has explored this relationship specifically in non-working adult women responsible for continuous household duties, where even moderate symptom severity may result in disproportionate functional impairment (8,9).

This gap in the literature underscores the need for focused investigation into the severity distribution of RLS symptoms and their association with quality of life among housewives. Understanding this relationship is essential for identifying high-burden subgroups, informing early screening strategies, and guiding targeted interventions aimed at improving sleep, physical functioning, and overall well-being. Therefore, the present study was designed to assess the frequency of RLS symptom severity and to evaluate the association between RLS severity and quality of life among symptomatic housewives aged 25–40 years in Sialkot, Pakistan. The primary objective was to determine whether increasing severity of RLS symptoms is associated with poorer quality of life in this population.

METHODS

This cross-sectional observational study was conducted to evaluate the severity of Restless Legs Syndrome (RLS) symptoms and their association with quality of life among housewives in Sialkot, Pakistan. Data were collected over a six-month period following approval from the institutional research ethics committee. A cross-sectional design was selected as appropriate for estimating symptom burden and examining associations between exposure variables and outcomes within a defined population at a single point in time, particularly for conditions with fluctuating but chronic symptomatology such as RLS (15).

The study population consisted of adult women residing in Sialkot who identified as housewives and were responsible for routine household activities. Participants were eligible if they were aged between 25 and 40 years and reported symptoms suggestive of RLS, including leg discomfort, an urge to move the legs, or sleep disturbance related to lower limb sensations. Women were excluded if they were pregnant or had medical conditions that could mimic or confound RLS symptoms, including cognitive impairment, deep vein thrombosis, patellofemoral pain syndrome, knee osteoarthritis, or other clinically significant knee-related disorders. These exclusion criteria were applied to minimize diagnostic misclassification and reduce the inclusion of RLS mimics, which are known to affect the validity of RLS assessment (16).

Participants were selected using a convenience sampling approach from residential communities within Sialkot. Eligible women were approached in person by trained researchers, informed about the study objectives and procedures, and invited to participate voluntarily. Written informed consent was obtained from all participants prior to enrollment. To reduce interviewer bias and enhance data consistency, all data were collected using standardized questionnaires administered in a uniform manner. Participants were assured of confidentiality, anonymity, and the right to withdraw from the study at any stage without consequences.

Data collection involved three components. Demographic and background information included age and household routine characteristics. RLS symptom severity was assessed using the International Restless Legs Syndrome Rating Scale (IRLS), a validated 10-item instrument widely used in clinical and epidemiological research (17). Each item evaluates symptom intensity, frequency, sleep disturbance, and impact on daily functioning, with responses scored from 0 (no symptoms) to 4 (very severe). Total scores range from 0 to 40 and were categorized as no symptoms (0), mild (1–10), moderate (11–20), severe (21–30), and very severe (31–40), in accordance with established scoring guidelines (17).

Quality of life was assessed using the World Health Organization Quality of Life–BREF (WHOQOL-BREF) questionnaire, a standardized instrument designed to evaluate subjective well-being across physical, psychological, social, and environmental domains (18). The WHOQOL-BREF consists of 26 items scored on a 5-point Likert scale, with higher scores indicating better quality of life. A composite quality-of-life score was calculated by summing item responses, with appropriate handling of negatively worded items, to allow quantitative analysis of overall quality of life. This instrument has demonstrated good reliability and validity across diverse populations and health conditions, including neurological and sleep-related disorders (18).

The primary independent variable was RLS severity as measured by the total IRLS score, while the primary dependent variable was overall quality of life as measured by the WHOQOL-BREF composite score. Age was treated as a categorical variable for descriptive and subgroup analyses. Potential sources of bias were addressed by applying strict eligibility criteria to exclude common RLS mimics, using validated instruments, and ensuring standardized data collection procedures.

Although probability sampling was not employed, efforts were made to recruit participants from diverse residential areas to improve representativeness. Confounding was assessed analytically by examining the relationship between RLS severity and quality of life while considering age as a covariate.

Sample size was calculated using a standard formula for cross-sectional studies, assuming a population size of approximately 8,000 housewives, a 95% confidence level, a 5% margin of

error, and a conservative population proportion of 50%, yielding a required sample size of 367 participants. This sample size was considered adequate to detect a moderate association between RLS severity and quality of life with sufficient statistical power.

Data were entered, cleaned, and analyzed using Statistical Package for the Social Sciences (SPSS) version 26.0. Descriptive statistics, including means, standard deviations, frequencies, and percentages, were used to summarize participant characteristics, RLS severity categories, and quality-of-life scores.

The association between RLS severity and quality of life was examined using simple linear regression analysis, with quality-of-life score as the dependent variable and RLS severity score as the predictor. Model assumptions, including linearity, independence, homoscedasticity, and normality of residuals, were assessed prior to interpretation. Results were reported using regression coefficients, standardized beta values, coefficients of determination (R^2), and corresponding p-values. Statistical significance was set at $p < 0.05$.

All collected data were stored securely and used exclusively for research purposes. Ethical principles outlined in the Declaration of Helsinki were followed throughout the study to ensure participant safety, confidentiality, and scientific integrity (19).

RESULTS

A total of 367 housewives aged between 25 and 40 years were included in the analysis. As shown in Table 1, the mean age of participants was 32.41 years (SD = 4.95). The mean Restless Legs Syndrome (RLS) severity score, measured using the International RLS Rating Scale, was 18.15 (SD = 8.12), with observed scores ranging from 0 to 40. The overall quality-of-life (QOL) score, assessed using the WHOQOL-BREF, had a mean value of 86.59 (SD = 12.77), with scores ranging from 50 to 130, indicating substantial variability in perceived quality of life across participants.

Age distribution of the study population is presented in Table 2. The largest proportion of participants belonged to the 25–30-year age group (158 women, 43.1%), followed by those aged 36–40 years (110 women, 30.0%) and 31–35 years (99 women, 27.0%). All age groups were adequately represented, allowing comparison of RLS severity patterns across age categories.

Table 3 summarizes the distribution of RLS severity categories. The majority of participants reported moderate symptoms (155 women, 42.2%) or severe symptoms (133 women, 36.2%). Mild symptoms were reported by 50 participants (13.6%), while very severe symptoms were observed in 16 participants (4.4%). Only 13 women (3.5%) reported no RLS symptoms. Overall, 304 participants (82.8%) reported at least moderate RLS symptom severity.

The association between RLS severity categories and quality-of-life classifications is detailed in Table 4. Among participants with no RLS symptoms, 53.8% (7/13) reported good QOL and 46.2% (6/13) reported excellent QOL, with none reporting poor or moderate QOL. In the mild RLS group, the majority reported good QOL (66.0%, 33/50), followed by excellent QOL (24.0%, 12/50), while only 10.0% (5/50) reported moderate or poor QOL. In contrast, participants with moderate RLS symptoms most frequently reported good QOL (70.3%, 109/155), but a substantial proportion reported moderate QOL (16.8%, 26/155). Among those with severe RLS, nearly half reported moderate QOL (48.9%, 65/133), while only 0.8% (1/133) reported excellent QOL.

Participants with very severe RLS predominantly reported good QOL (87.5%, 14/16), with the remainder reporting moderate QOL (12.5%, 2/16). The overall association between RLS

severity and QOL category was statistically significant ($\chi^2 = 93.18$, df = 12, $p < 0.001$), with a moderate effect size (Cramer's V = 0.29). Age group–wise distribution of RLS severity is presented in Table 5. In the 25–30-year age group, moderate RLS symptoms were most common (66 women, 41.8%), followed by severe symptoms (47 women, 29.7%).

In the 31–35-year group, moderate symptoms were again most frequent (49 women, 49.5%), while severe symptoms were reported by 33 women (33.3%). Among participants aged 36–40 years, severe RLS symptoms were most prevalent (53 women, 48.2%), followed by moderate symptoms (40 women, 36.4%). The association between age group and RLS severity was statistically significant ($\chi^2 = 20.85$, df = 8, $p = 0.008$), with a small-to-moderate effect size (Cramer's V = 0.17).

Table 1. Descriptive statistics of study variables (N = 367)

Variable	Minimum	Maximum	Mean	Standard Deviation
Age (years)	25	40	32.41	4.95
RLS severity score (IRLS)	0	40	18.15	8.12
Quality of life score (WHOQOL-BREF total)	50	130	86.59	12.77

Table 2. Age group distribution of participants

Age group (years)	Frequency	Percentage (%)
25–30	158	43.1
31–35	99	27.0
36–40	110	30.0
Total	367	100

Table 3. Distribution of RLS severity categories

RLS severity category	Frequency	Percentage (%)
No symptoms	13	3.5
Mild	50	13.6
Moderate	155	42.2
Severe	133	36.2
Very severe	16	4.4
Total	367	100

Table 4. Association between RLS severity and quality-of-life categories (χ^2 test)

RLS severity	Poor	Moderate	Good	Excellent	Total
No symptoms	0	0	7	6	13
Mild	1	4	33	12	50
Moderate	0	26	109	20	155
Severe	0	65	67	1	133
Very severe	0	2	14	0	16
Total	1	97	230	39	367

Table 5. Association between age group and RLS severity (χ^2 test)

Age group	No symptoms	Mild	Moderate	Severe	Very severe	Total
25–30	8	29	66	47	8	158
31–35	0	14	49	33	3	99
36–40	5	7	40	53	5	110
Total	13	50	155	133	16	367

Table 6. Linear regression analysis predicting quality of life from RLS severity

Predictor	B	SE	Standardized β	95% CI for B	t	p-value
Constant	100.15	1.44	—	97.32 to 102.98	69.54	<0.001
RLS severity score	−0.75	0.07	−0.48	−0.89 to −0.60	−10.31	<0.001

Results of the linear regression analysis examining the relationship between RLS severity and quality of life are shown in Table 6. RLS severity score was a significant predictor of QOL score, with an unstandardized regression coefficient (B) of −0.75 (SE = 0.07). This indicates that for each one-point increase in RLS severity score, the QOL score decreased by an average of 0.75 points. The standardized beta coefficient was −0.48, and the 95% confidence interval for B ranged from −0.89 to −0.60. The overall regression model was statistically significant ($F(1,365) = 106.32$, $p < 0.001$), with a multiple correlation coefficient (R) of 0.475. The model explained 22.6% of the variance in quality-of-life scores ($R^2 = 0.226$; adjusted $R^2 = 0.223$).

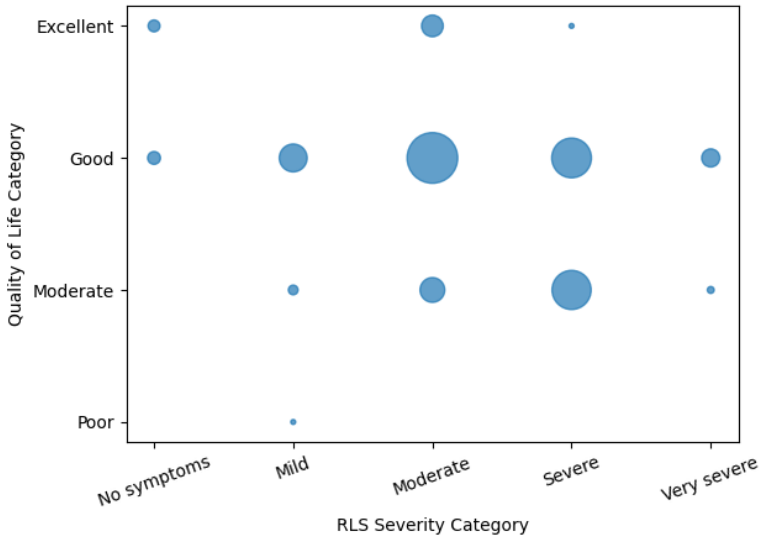

Figure 1. Distribution of quality-of-life categories across restless legs syndrome severity levels

Figure 1 presents a bubble-density matrix illustrating the joint distribution of quality-of-life (QOL) categories across increasing Restless Legs Syndrome (RLS) severity levels, with bubble size proportional to the number of participants in each cell. Among participants with no RLS symptoms, quality of life was concentrated entirely in the higher categories, with 53.8% reporting good QOL (7/13) and 46.2% reporting excellent QOL (6/13). In the mild RLS group, good QOL predominated (66.0%, 33/50), while poor QOL was rare (2.0%, 1/50). As symptom severity increased, the distribution progressively shifted downward. Participants with moderate RLS showed a mixed pattern, with the largest cluster in the good QOL category (70.3%, 109/155) but a substantial proportion reporting moderate QOL (16.8%, 26/155). In the severe RLS group, the dominant cluster shifted to moderate QOL (48.9%, 65/133), with a marked reduction in excellent QOL (0.8%, 1/133). Very severe RLS was characterized by a compressed distribution, with 87.5% of participants (14/16) reporting good QOL and the

remainder reporting moderate QOL (12.5%, 2/16), and no participants reporting excellent QOL. Overall, the visualization highlights a clear severity-dependent downward gradient in quality-of-life distribution, reinforcing the statistically significant association between increasing RLS severity and reduced quality of life observed in the inferential analyses.

DISCUSSION

The present study examined the distribution of Restless Legs Syndrome (RLS) symptom severity and its association with quality of life among symptomatic housewives aged 25–40 years in Sialkot, Pakistan. The findings demonstrate a substantial burden of moderate to severe RLS symptoms within this population and reveal a statistically significant, clinically meaningful inverse relationship between RLS severity and overall quality of life. Increasing symptom severity was associated with progressively lower quality-of-life scores, with RLS severity alone accounting for approximately 22.6% of the variance in quality-of-life outcomes. These results reinforce the growing recognition of RLS as a disorder with far-reaching functional and psychosocial consequences rather than a purely sensory condition (20).

The observed distribution of symptom severity indicates that the majority of participants experienced moderate or severe RLS symptoms, a pattern that differs markedly from prevalence estimates reported in population-based studies from Western countries, where mild forms predominate (21). This discrepancy is likely attributable to differences in sampling frames and contextual risk factors. In the present study, participants were symptomatic housewives, a group that may be exposed to multiple RLS-associated stressors, including prolonged physical workload, disrupted sleep schedules, nutritional deficiencies, and limited access to healthcare. Previous studies in South Asian and Middle Eastern settings have similarly reported higher symptom burden in women and non-working populations, suggesting that sociocultural and lifestyle factors may amplify RLS severity beyond what is observed in general population samples (22,23).

A key finding of this study is the clear severity-dependent gradient in quality-of-life impairment. While participants with no or mild RLS symptoms largely reported good to excellent quality of life, those with severe symptoms predominantly reported moderate quality of life, and excellent quality of life was nearly absent in this group. The regression analysis further quantified this relationship, showing that each one-point increase in RLS severity score was associated with an average decrease of 0.75 points in quality-of-life score. This magnitude of effect is comparable to that reported in clinical and community-based studies, which have consistently demonstrated that symptom severity, rather than mere presence of RLS, is the primary determinant of functional impairment (24,25).

The mechanisms underlying this association are likely multifactorial. RLS-related sleep disruption is a well-established pathway linking symptom severity to reduced daytime functioning, fatigue, mood disturbances, and diminished social participation (26). For housewives, whose daily responsibilities require sustained physical effort, concentration, and emotional regulation, even moderate sleep disturbance may translate into disproportionate functional limitations. This may explain why quality-of-life reductions were evident even among participants who did not report very severe symptoms. Similar patterns have been observed in studies of caregivers and individuals engaged in unpaid domestic labor, where health conditions exert amplified effects on perceived well-being due to the absence of rest periods and external support systems (27).

Age-stratified analyses revealed that moderate and severe RLS symptoms were present across all age groups, with a tendency toward higher severity in the older subgroup. However, the

overall association between age and RLS severity was modest, suggesting that within this relatively narrow age range, factors other than chronological aging may play a more prominent role. This finding contrasts with large epidemiological studies that report increasing RLS prevalence with advancing age (28) but aligns with research indicating that in younger and middle-aged women, reproductive history, iron status, stress, and lifestyle factors may outweigh age as determinants of symptom burden (29).

Several methodological considerations should be acknowledged when interpreting these findings. The cross-sectional design precludes causal inference, and the use of convenience sampling limits generalizability beyond symptomatic housewives in similar settings. Additionally, while validated instruments were used to assess RLS severity and quality of life, diagnostic confirmation using full IRLSSG criteria and objective measures such as serum ferritin levels were not incorporated, which may have resulted in residual misclassification. Nevertheless, exclusion of common RLS mimics and standardized data collection procedures were employed to mitigate this risk. Importantly, the strength and consistency of the observed associations, supported by moderate effect sizes and robust statistical significance, suggest that the findings reflect a meaningful clinical pattern rather than random variation (30-35).

In summary, this study highlights a high burden of moderate to severe RLS symptoms among symptomatic housewives and demonstrates a strong inverse association between symptom severity and quality of life (36-38).These findings underscore the need for increased awareness of RLS in non-working female populations, early identification of symptomatic individuals, and incorporation of sleep and neurological assessments into routine primary care for women engaged in household labor. Future research should employ population-based sampling, longitudinal designs, and biological markers to further elucidate causal pathways and inform targeted interventions aimed at improving both symptom control and quality of life in this underserved group (39-41)

CONCLUSION

This study demonstrates a substantial burden of moderate to severe Restless Legs Syndrome symptoms among symptomatic housewives aged 25–40 years and identifies a strong, statistically significant inverse association between symptom severity and overall quality of life. Increasing RLS severity was associated with progressively poorer quality-of-life outcomes, accounting for nearly one-quarter of the observed variance, underscoring the clinical relevance of symptom burden in this population. The findings highlight housewives as an underrecognized high-risk group in whom RLS-related sleep disruption, fatigue, and functional impairment may substantially interfere with daily responsibilities and well-being. These results emphasize the need for improved awareness, early screening, and targeted management strategies for RLS within primary care and community health settings to mitigate its impact on quality of life and support better health outcomes among women engaged in unpaid domestic labor.

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DECLARATIONS

Ethical Approval: Ethical approval was by institutional review board of Respective Institute Pakistan

Informed Consent: Informed Consent was taken from participants.

Authors' Contributions:

Concept: TG; Design: ZM; Data Collection: EB, HI, IK; Analysis: TG; Drafting: TG, EB, HI, IK

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

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