Research Article

Restless Legs, Restless Lives: Mean Quality of Life, Sleep, and Depression Scores in Restless legs syndrome Patients

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Abstract

Background: Restless legs syndrome (RLS), is a gradual sensorimotor disorder which causes fatigue, pain and restlessness in the legs often leading to sleep disturbances, daytime fatigue or psychological problems.
Objectives: To measure mean quality of life score, mean quality of sleep score and mean quality of depression score in patients suffering from Restless legs syndrome.
Methods: This cross-sectional analytical study was conducted in the Neurology OPD of Public sector Hospital, Lahore. A sample of 112 patients diagnosed with Restless legs syndrome was selected using convenience sampling. Data were collected through validated questionnaires, including Restless Legs Syndrome Quality of Life Instrument (RLS-QLI), Pittsburgh Sleep Quality Index (PSQI), and Center for Epidemiologic Studies Depression Scale (CES- D).
Results: Among the 112 participants, the average CES-D score was 27.96, with 85.7% of patients having major depressive symptoms. The mean PSQI score was 9.29, and 58% of the patients experienced poor sleep quality. In terms of QoL,33% had poor quality of life while 52.7% had a moderate quality of life.
Conclusion: This study demonstrates that quality of life, sleep and mental health are significantly influenced by Restless legs syndrome. Many individuals with Restless legs syndrome exhibit severe depression and poor sleep quality. Restless legs syndrome affects sleep quality, mental well-being and quality of life irrespective of demographic factors. Therefore, holistic Restless legs syndrome management should encompass both its physical and psychological dimensions in order to enhance patient outcomes.
Keywords: Restless Legs Syndrome, Quality of Life, Quality of Sleep, Depression
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Introduction

Restless Leg Syndrome (RLS), also known as Willis-Ekbom disease (WED), is a common neurological movement disorder characterized by an irresistible urge to move, primarily the legs[1].The initial diagnostic criterion for restless legs syndrome (RLS) were created in 1995 and updated in 2003. Another criterion was added in 2014 in an attempt to increase specificity by removing similarities[2]. The fundamental components of the clinical symptoms have remained the same in all iterations of the criteria: motor symptoms (repeated and time to time limb movements and other motor manifestations) and sensory symptoms (restlessness, wanting to move, troublesome feeling and pain) [3]. Movement usually eases the sensations that arise after periods of rest or inactivity, especially in the evening and at night and the paresthesias and tingling sensation can be extremely obnoxious and frequently result in serious sleep problems[4]. RLS affects individuals of all ages, although it becomes more common as the age increases, impacting up to 10% of the adult population worldwide[5]. Several studies have demonstrated the profound effect that RLS has on various aspects of people's lives, including sleep quality, daytime functioning, and mental health[6]. Sleep disturbances are a characteristic feature of RLS, with affected individuals experiencing difficulty falling asleep and staying asleep, which causes their sleep to be fragmented and less efficient[7]. Resultantly, these sleep disturbances can lead to excessive daytime sleepiness, impaired cognitive function, and diminished productivity, ultimately compromising one's overall quality of life (QoL). According to the new

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research, there may be a bidirectional relationship between RLS and depression[8]. Individuals with RLS are more likely to develop depressive symptoms[9]. As the criteria for diagnosis and the effects of the syndrome are understood, a number of studies have been conducted in the past to understand the association of RLS with mental health, quality of life and sleep. One such study was conducted in the United States at the Penn Sleep Center at the University of Pennsylvania and RLS support groups in Philadelphia. It was found that in addition to influencing sleep quality, the intensity of RLS symptoms in elderly individuals has a significant impact on other facets of quality of life, such as social functioning, day-to-day functioning, and emotional wellbeing[10]. Another such study was conducted in University of Health Sciences Haydarpaşa Numune Training and Research Hospital in Istanbul, Turkey. Depressive symptoms were detected in 69.7% (n=85) of the RLS patients. The study indicates that depression frequency was high, with 57.9% in the mild-moderate group and approximately 72% in other groups. The Pittsburgh Sleep Quality Index (PSQI) scores indicated that 72% of the patients had daytime dysfunction. Sleep quality was generally worse in patients with severe RLS, with significant differences observed in sleep duration, efficiency, and daytime dysfunction[9].

Assessment of sleep quality, quality of life and depression in RLS patients is crucial to develop comprehensive treatment plans that enhance patients' general health and quality of life. In order to clarify the complex effects of RLS on people's life, this cross-sectional analytical study intends to measure mean quality of life score, mean quality of sleep score and mean depression score in RLS patients. By recognizing these, medical professionals can develop personalized treatment plans that address both physical and psychological aspects of RLS, leading to better patient outcomes. The findings can guide distribution of resources, ensuring adequate funding for sleep clinics and mental health support. Additionally, these findings may also aid in policy development and promotion of universal health care, ultimately improving the overall quality of life for RLS patients.

Methods

This cross-sectional study was conducted, in the Neurology Ward OPD, public sector Hospital, Lahore, on the patients with a confirmed diagnosis of Restless Legs Syndrome by the physician. The study included 112 RLS patients who gave consent, with the age ranging from 18 to 60. The sample size is calculated using the WHO sample size calculator: n = [Z^2 {1-α/2} * P * (1 - P)] / d^2 , with confidence Level (1−α): 90% , anticipated population proportion (P): 0.72 (9) and absolute precision Required (d): 0.07 . Those patients having cognitive impairment, language barrier, psychiatric disorders other than depression, significant neurological disorders (Parkinson's disease, epilepsy), peripheral neuropathy (from diabetes, autoimmune diseases like SLE and vitamin B12 deficiency) , medications like SSRIs , antipsychotics and dopamine antagonists which affect RLS symptoms significantly were not included in this study. Convenience Sampling technique was used to collect data. Data were collected from June 15th to July 30th 2024. Ethical Approval was obtained from the hospital before the study. The research is conducted in accordance with the ethical standards that protect the rights, safety, and well-being of the participants.

A preformed questionnaire proforma having 3 parts, Centre for the Epidemiological Studies Depression Scale (CES-D)[17], Pittsburgh Sleep Quality Index (PSQI)[15], and Restless Legs Syndrome Quality of Life Instrument (RLS-QLI)[12], was used as a data collection tool. It was handed over to the participants to be filled by them, and then collected. The scale used to quantify and measure Quality of Life was RLS-QLI. The RLS-QLI comprises 17 questions across four domains. The sum of all domains can be added and then divided by 4 to get a cumulative value between 0 and 100 and then divided into 5 groups where 0-20 (very good quality of life), 21-40 (good quality of life), 41-60 (moderate quality of life), 61-80 (poor quality of life), and 81-100 (very poor quality of life).

Quality of sleep was assessed by the Pittsburgh Sleep Quality Index (PSQI). The PSQI consists of 19 self-rated questions and 5 additional questions rated by a bed partner or roommate, if available. The component scores are summed to yield a global score ranging from 0 to 21, which can then be divided into 4 groups such that excellent sleepers have a PSQI score of 0-3, good sleepers have a score of 4-5, moderate sleepers have a score of 6-8, and poor sleepers have a score of 9 and above.

Depression was analyzed by using the Center for Epidemiologic Studies Depression Scale (CES-D). It has 20 questions and each question is given a score from 0-3. The scores for all the questions are added, and total score between 0-60 is obtained which can be further used to divide the study population into 3 groups such that scores 0-9 have no significant depressive symptoms, scores 10-15 have mild to moderate depressive symptoms, and scores 16 and above have major depressive symptoms.

Data was entered and analyzed by SPSS version 26. Mean & standard deviation were calculated for quantitative variables like age, scores for quality of life, quality of sleep and depression. Frequency and percentages were calculated for qualitative variables like gender, marital status, residence, education and for groups based on scores for quality of life, quality of sleep and depression. Effect modifiers is controlled through stratification. Post stratification chi-square test was applied to determine the association of age groups, gender, residence and marital status with the groups based on scores for quality of life, quality of sleep and depression. P value <0.05 is kept significant.

Results

112 patients (68 [60.7%] female and 44 [39.3%] male)

diagnosed with RLS by the physician, were part of the study. The mean age of the participants is 48.71 ±7.37 and the age range is (18-60). Out of 112, 79(70.5%) are married, 33(29.5%) are unmarried, 90(80.4%) are urban, 22(19.6%) are rural, and 72% have educational status of graduation or more. Among age groups 13(11.6%) are adults and 99(88.4%) are middle aged.

The mean score of CES-D scale in RLS patients is 27.96±10. According to the CES-D scores, 96(85.7%) of the patients had major depression, mild to moderate depressive symptoms were present in 9 patients (8%) and 7 patients (6.3%) had no significant symptoms. There was no statistically significant difference between the groups based on depression scores and categorical variables like age, gender, marital status and residence, whose p values are 0.52, 0.44, 0.55 and 0.39 respectively (Table 1).

PSQI mean score of RLS patients is 9.29±3.6. According to PSQI scores, 6(5.4%) had excellent sleep,7(6.3%) had good sleep, 34(30.4%) had moderate sleep and 65(58%) had poor sleep. There was no statistically significant difference between the groups based on PSQI scores and categorical variables like age, gender, marital status and residence, whose p values are 0.56, 0.20, 0.20 and 0.69 respectively (Table 1).

Out of 112 participants, 4 (3.6%) had no impact of Restless Leg Syndrome (RLS) on Quality of Life (QOL). 12 (10.7%) of the patients had good quality of life, 59 (52.7%) had moderate and 37 (33%) patients had poor quality of life. There was no statistically significant difference between the groups based on RLS-QLI scores and categorical variables like age, gender, marital status and residence, whose p values are 0.49, 0.23 , 0.53 and 0.23 respectively (Table 1).

Table 1: *P values of chi square tests applied to compare categorical variables like age groups, gender, marital status and residence with the groups based on scores for depression, quality of life and quality of sleep.*

Variables	CES-D	RLS-QLI	PSQI
	P value	P value	P value
Marital status	0.55	0.53	0.2
Residence	0.39	0.23	0.69
Gender	0.44	0.23	0.2
Age groups	0.52	0.49	0.56

Discussion

This study signifies that Restless Legs Syndrome (RLS) highly affects an individual's quality of life (QoL), sleep quality and mental health. The findings show that RLS not only disrupts sleep but also highly contributes to depressive symptoms which can have a knock on effect on a person's overall well-being. The disorder has a serious and psychologically taxing burden since the mean CES-D score is 27.96 indicating that 85.7% of participants had severe depressive symptoms[10]. This is in tandem with previous studies such as, Sayman et al (2023) that found similar rates of depression among RLS patients. However, our research goes ahead to point out that clinical significance of managing cases of depression as part of managing RLS is crucial. It is essential to note that depression in patients with RLS) should not necessarily be viewed simply as a consequence of sleep disorders but rather as an important aspect that necessitates integrated psychosocial care[11].

Moreover, our results show how deeply ingrained disturbances of sleep are within the context of RLS – a finding that is echoed by the fact that 58% of study participants had poor sleeping quality. Cuellar et al. (2007) show significant sleep problems in RLS patients, but this study underlines the interrelation between depression and insomnia[12]. This suggests that they might have a mutually reinforcing effect leading to an increase in each other's severity. Thus, tackling both sleep quality and mental health at once may be a more efficacious treatment than doing either separately. Similar significant impacts were also observed on quality of life with poor quality of life reported by 33% of participants while moderate QoL was reported by 52.7%. While these findings concur with previous studies such as Allen et al (2005), this work provides additional insights through demonstrating that the adverse effects of RLS on quality of life are not materially influenced by demographic

variables including age, sex or marital status[13]. This implies that RLS affects people from diverse backgrounds indicating the necessity for universal screening and treatment strategies. According to this research, the age and sex factors failed to aggravate Restless Legs Syndrome (RLS) impacts in terms of Quality of Life (QoL) despite earlier postulations[14].

To understand a disorder like RLS, this study used validated instruments such as the CES-D, PSQI, and RLSQLI capturing its complexity. Thus, it was possible to look at depression, sleep quality and QoL among subjects with RLS concurrently thereby providing a panoramic perspective of their experiences. Taking into account all these leading symptoms gives a clearer picture of how they interrelate hence making room for future actions aimed at ameliorating them[15]. For instance, interventions that target both sleep and mental health are likely to enhance quality of life more than those that solely focus on physical signs. Nevertheless, there are noteworthy weaknesses in this study. Our results may not be applicable to everyone due to the small size of the sample and convenience sampling. To substantiate these findings and understand different patterns in RLS outcomes from more varied groups of individuals, larger studies, preferably multi-center trials, would be necessary. Moreover, even though validated tools were used by us in assessing QoL, sleep and depression levels respectively; causal relationships cannot be established because our research is cross-sectional in design[16].

Longitudinal studies would serve beneficial in understanding the trajectory of RLS and its associated comorbidities over time.

Conclusively, this study emphasizes on important RLS management approaches that target on physical, psychosocial and sleep related problems as well. In recognition of how complex relationships between sleeping problems, mental health and QoL can be dealt with by clinicians so that they provide more individualised and efficient care[17].

Further investigations ought to delve into sequential treatments aimed at these areas in order to enhance not only clinical results but also daily lives of people living with RLS.

The use of convenience sampling and a single setting (Mayo Hospital OPD) may introduce bias, while the relatively small sample size of 112 participants may not yield robust results. Additionally, the short study duration of 1.5 months may not capture the full variability of RLS symptoms. The study's reliance on self-reported data from participants with adequate English or Urdu proficiency may also impact diversity[18]. Furthermore, the exclusion of individuals with certain neurological or psychiatric conditions, or those taking specific medications, limits the applicability of the findings to all RLS patients. Finally, the potential for cognitive bias due to depression and sleeplessness among participants should be considered.

Conclusion

The results of this study demonstrate that RLS significantly impairs quality of life, sleep, and mental health, with a high prevalence of major depression and poor sleep quality among the study participants. Despite the demographic diversity of the sample, no significant associations were found between these outcomes and variables such as age, gender, marital status, or residence, suggesting that RLS exerts its effects uniformly across different population groups. This study underscores the need for comprehensive management strategies for RLS that not only address the physical symptoms but also the associated psychological and sleep- related challenges. Given the high rates of depression and poor sleep quality, integrating mental health support and sleep therapy into the treatment plans of RLS patients could lead to improved outcomes and better quality of life.

Further research is warranted to explore potential interventions that could mitigate the impact of RLS on these domains and to better understand the underlying mechanisms linking RLS with depression and sleep disturbances.

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Authors' Contributions:
HAC,HA,EA,MA: Involved in conceptualization of study and writing original draft.
HS,FS: Involved in data curation, formal analysis and final review & editing
MT,HA: Involvedin design ofstudy and finalreview &editing

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