

ORIGINAL RESEARCH



Relationship Between Anxiety and Depression Levels and Suicide in Restless Legs Syndrome

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Abstract

Background: Restless legs syndrome (RLS) is a common neurological disease. RLS can cause serious problems especially in transition to sleep and in the continuation of sleep. Since RLS is a treatable neurological disease, it is important to diagnose it. Since there is a close relationship between depression and RLS, suicide or suicide attempt may be a cause of high mortality in depression due to RLS. we wanted to emphasize.

Materials and Methods: A total of 171 individuals, 82 individuals diagnosed with RLS and 89 healthy individuals without RLS diagnosis, were included by random sampling method. After the necessary information was given to those who volunteered to participate in the study and their consent was obtained, the necessary evaluation scales were applied through face-to-face evaluation interviews.

Results: When the participants were compared according to their age; The age of the patient group ranged from 20 to 75 and the mean age was 52.52 ± 14.64 . When the groups were compared according to the scale scores; BAI and RLSSS scores of the patient group were significantly higher than the control group. When the scale scores were compared according to the RLS stages; There was a significant difference between the BDI scores according to the stages. Considering the correlations of scale scores in the patient group; No significant correlation was observed between RLSSS and BID scores.

Conclusions: Somatoform disorder and chronic pain were found to be high in RLS. Depression and anxiety disorders can be seen more frequently in RLS patients, especially due to sleep disturbance caused by RLS. Although suicidal thoughts were reported to be higher in people with RLS, our study indicated that the suicide rate did not increase in individuals with RLS.

Keywords: Restless legs syndrome, Depression and anxiety disorder, Suicide

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1 | INTRODUCTION

Restless legs syndrome (RLS) is a prevalent neurological disease with approximately 7–10% (1). RLS can cause serious problems, especially in hypnagogic and lasting of sleep. As RLS is a treatable neurological disease, it is essential to diagnose it (2). The typical indicator of disease is an impulse to move the legs, especially the lower extremities, at sleep time. Diagnostic criteria for RLS are determined by the International Restless Legs Syndrome Working Group (IRLSSG) (3). Although its pathophysiology is still unclear, it is thought that pathological dopaminergic pathways cause (4–7). Triggering factors such as pregnancy, Type 2 diabetes mellitus, iron deficiency, uremia can be varied (8, 9). Studies have shown that lifelong depression and anxiety disorders are approximately 2–5 times more common in patients with RLS (10–12). The cause of psychiatric problems is thought to be secondary to the deterioration in sleep quality (13, 14). Suicide is a global health problem and is associated with many risk factors, including the male gender. Family history of suicide, childhood distress, alcohol abuse, psychiatric disorders, and sleep problems have been reported as triggering factors for suicide (15). As there is a close relationship between depression and RLS, suicide or suicide attempt in depression due to RLS may cause high mortality. According to the literature, few studies analyze the relationship between RLS and suicide (16–18). It was emphasized that there might be a relationship between RLS and suicide in a study conducted in the USA (19). It is aimed to emphasize the importance of RLS, which is common in the community and can be treated, and more importantly, can cause high mortality if not treated in this study.

2 | MATERIAL AND METHOD

Study Group

A total of 171 people, including 82 individuals who were diagnosed with RLS after clinical interview and neurological examination by a neurologist, and 89 healthy individuals without RLS, who applied to the neurology polyclinic of Giresun University Research

and Training Hospital between September and December 2020, were included in the study by random sampling method. Those younger than 18-year-old, having an ongoing neurocognitive impairment or mental retardation, a history of alcohol/substance use disorder, diagnoses of schizophrenia, and bipolar mood disorder were not included in the study. Necessary information was given to those who volunteered to participate in the study. Their consent was obtained, a face-to-face evaluation interview was done, and the necessary evaluation scales were applied. Detailed psychiatric examinations of the participants in the study were performed.

Our study is an observational, cross-sectional study with a control group, and ethics committee approval was obtained by Giresun University clinical research ethics committee on 09/01/2019 with decision number 13.

3 | DATA COLLECTING TOOLS

Sociodemographic Data Form: It is a semi-structured assessment tool prepared by researchers to obtain demographic and socio-cultural data of participants.

Rating Scale of Restless Leg Syndrom: The International Restless Legs Syndrome Study Members developed this scale which consists of 10 questions (Walters AS, LeBrocq C, Dhar A, Hening W, Rosen R, Allen RP, et al. The International Restless Legs Syndrome Study Group. Validation of the International Restless Legs Syndrome Study Group rating scale for restless legs syndrome. *Sleep Med* 2003;4:121-32.). The lowest score that can be obtained from the scale is 0, and the highest score is 40. A score of 1-10 indicates mild disease, 11-20

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indicates moderate disease, 21-30 indicates severe, and 31-40 indicates very severe disease.

Beck Anxiety Scale: The scale, which was developed to evaluate the level of anxiety experienced by individuals, consists of 21 items (Beck AT, Epstein N, Brown G. An inventory for measuring clinical anxiety: Psychometric properties. *J Consult Clin Psychol.* 1988;56:893-7). High scores obtained from the scale indicate a high level of anxiety. The scale's Turkish validity and reliability study were conducted in 1998 (Ulusoy M, Şahin N, Erkman H. Turkish Version of The Beck anxiety inventory: psychometric properties. *J Cognitive Psychotherapy: Int Quarterly.* 1998;12:28-35).

Beck Depression Inventory: The scale, which was developed by Beck (1961) to evaluate the depression levels of individuals, consists of 21 questions, each ranging from 0 to 3 points (Beck AT. An inventory for measuring depression. *Arch Gen Psychiatry* 1961;4:561-71). The scale was adapted into Turkish by Tegin (Tegin B. Cognitive Disorders in Depression: A Study According to the Beck Model. Hacettepe University Unpublished Doctoral Thesis, Department of Psychology, Ankara 1980). High scores indicate higher depression severity.

Beck Suicide Ideation Scale: The scale which investigated five factors: characteristics of attitude towards Suicide, life and death, suicidal ideation and desire characteristics, characteristics of the designed attempt, a realization of the designed attempt, and background factors was developed by Beck et al. (1979) (Beck AT, Kovacs M, Weissman A). (1979) Assessment of Suicide intention: the scale for suicide ideation. *J Consult Clin Psychology* 47: 343-352). Scores ranging from 0 to 38 can be obtained from the scale, and high scores indicate the severity of suicidal ideation. The scale's Turkish validity and reliability study were performed (Dilbaz N, Holat H, Bayam G, Tüzer T, Bitlis V.)

The validity and reliability of the Suicidal Ideation Scale. 31st National Psychiatry Congress (1995, Istanbul), Full Text Book, 1995, pp.40-41, Istanbul).

4 | STATISTICAL ANALYSIS

The data obtained in the research were analyzed using SPSS (Statistical Package for the Social Sciences) 26 package program for Windows. Continuous variables were expressed as mean \pm standard deviation, and categorical variables were expressed as numbers and percentages. Conformity of continuous variables to normal distribution was evaluated with Kolmogorov-Smirnov Test. Since continuous variables did not show normal distribution, Mann Whitney U Test compared quantitative data between two independent groups. The Kruskal-Wallis H Test was used to evaluate continuous quantitative data between more than two independent groups. Pearson Correlation Test was used to examine the level of relationship between the scales applied to the participants. Correlation severity; If $r < 0.2$, very weak correlation, 0.2-0.4 weak correlation, 0.4-0.6 moderate correlation, 0.6-0.8 high correlation, and if higher than 0.8, it is accepted as very high correlation. In statistical analysis, the significance value was accepted as $p < 0.05$.

5 | FINDING

When the participants were compared according to their age, the patient group's age ranged from 20 to 75, and the mean age was 52.52 ± 14.64 . The age of the control group ranged from 18 to 78 years, and the mean age was 40.42 ± 14.08 . The groups differed significantly from each other in mean age ($p < 0.05$).

The groups were compared in terms of their sociodemographic characteristics; gender, income status, smoking, suicide attempt history, and shift work were similar ($p > 0.05$). The groups differed in marital status, occupation, concomitant medical diseases, psychiatric disease, and alcohol use ($p < 0.05$). While 87.5% of the patient group was married, this rate was 67.4% in the control group. While 50% of the patient group were not working, 65.2% of the control group were workers/civil servants. While 62.5% of the patient group had a concomitant medical disease, 62.9% of the control group did not. While 50% of the patient group had a psychiatric disease, 82% of the control group did not. While the rate of alcohol

use was 5% in the patient group, it was 27% in the control group Table 1.

15%(n:6) of the patient group had stage 1 level RLS severity, 47.5% (n:19) stage 2, 25% (n:10) stage 3, 12.5% (n:5) stage 4.

When the groups were compared according to their scale scores, BAS and RSLSS scores of the patient group were significantly higher than the control group ($p<0.05$). Although the BDI and BSIS scores of the patient group were higher than those of the control group, this difference was not statistically significant ($p>0.05$) Table 2.

When the scale scores were compared according to the RLS stages in the patient group; There was a significant difference between the BDI scores as the stages ($p<0.05$). When the groups were compared with themselves in pairs, it was observed that individuals with stage 4 RLS had significantly higher depression scores than individuals with stage 1 RLS ($p<0.05$) Table 3.

Considering the correlations of scale scores in the patient group; No significant correlation was observed between RSLSS and BSIS scores ($p>0.05$). Significant positive correlations were observed between all other scales ($p<0.05$). There was a high positive correlation between BAS and BDI, a weak positive correlation between BAS and RSLSS, a high positive correlation between BAS and BSIS, a weak positive correlation between BDI and RSLSS, and a high positive correlation between BDI and BSIS Table 4.

6 | DISCUSSION

Although the pathophysiology between RLS and psychogenic disorders is still unclear, a study found a high association of somatoform disorder and chronic pain with RLS (20). It has been reported that the comorbidity of the patients contributed negatively to this process (20). Studies have also reported that dopaminergic agents that we use in RLS treatment may cause impulse control disorders and show impulsive behaviors in patients (21–23). Our study reported high anxiety and depression scores in RLS patients like the other studies (24).

Patients' presence and severity of depression and/or anxiety are still not considered in the treatment strategy. More studies investigating the effects of dopaminergic agents and antidepressants are needed.

Another study found that 13 of 27 RLS patients had high depression and anxiety scores and six patients developed these depression and anxiety symptoms before RLS diagnosis. They suggested that depression and anxiety are not caused by RLS (25). On the other hand, we thought that emergent mood disorders in our study were related to RLS symptoms. In a study reported from our country, which supports our view, it was reported that depression and anxiety disorders might be more common in RLS patients, significantly that they may develop due to sleep disturbance caused by RLS (26).

We found that patients with higher stages of RLS had higher depression scores compared to patients with lower stages. In our literature research, we could not find any study reporting this.

Few studies are examining the relationship between suicidal ideation and RLS. A cohort study conducted in the USA found that among 169,373 participants, those with RLS symptoms were more likely to self-harm than those without RLS (27). In a study conducted by the German group, 130 patients with RLS and 2265 control groups were examined, and it was reported that suicidal thoughts were more common in people with RLS. It has been reported that this result may be controversial as a single-item suicidal ideation scale was used in the study (10). A recent study reported that suicidal thoughts might be three times more common in individuals with RLS when 192 RLS patients and 158 control groups, who were administered a 4-question suicide scale, were compared (28). These studies also found that the relationship between RLS and suicide was independent of depression and other variables (age, gender, race, marital status, education, income, and drug and alcohol abuse).

In a meta-analysis compiling 39 studies, it was reported that suicidal thoughts were two times more common in individuals with RLS. It has been reported that the cause may be secondary to more common sleep disorders (sleep disruption, insomnia, etc.) (29).

RELATIONSHIP BETWEEN ANXIETY AND DEPRESSION LEVELS AND SUICIDE IN RESTLESS LEGS SYNDROME

In our study, although the suicide scale scores were higher in individuals with RLS, we did not find it statistically significant compared to the control group. Our use of the Beck suicide scale and the use of a scale with fewer questions in the studies made us think that the result of our study might be more decisive, but we thought that the smaller sample size might have affected our results. More extended and more comprehensive studies are needed on this subject.

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TABLE 1: Comparing groups in line with sociodemographical characteristic

	Patient n (%)	Control n (%)	Test Statistic	
Gender				
Female	67 (81,7)	65 (73)	=0,886	0,347*
Male	15 (18,2)	24 (27)		
Marital status				
Married	71 (86,5)	60 (67,4)	=4,757	0,029*
Single	11 (13,4)	29 (32,6)		
Occupation				
Unemployed	41 (50)	8 (9)	=39,694	<0,001*
Employee/Official	20(24,3)	58 (65,2)		
Retired	15 (18,2)	9 (10,1)		
Student	6 (7,3)	14 (15,7)		
Income TL(Turkish liras)				
<2000	19(23,1)	21 (23,6)	=5,209	0,074*
2001-3000	10(12,1)	10 (11,2)		
3001 up	53(64,6)	58 (65,2)		
Medical illness				
Yes	40(48,7)	33 (37,1)	=6,216	0,013*
No	42 (51,2)	56 (62,9)		
Psychiatric illness				
Yes	41 (50)	16 (18)	=12,519	<0,001*
No	41 (50)	73 (82)		
Smokes				
Yes	30(36,5)	32 (36)	=0,000	1,000*
No	52 (63,4)	57 (64)		
Alcohol use				
Yes	10 (12,1)	24 (27)	=6,966	0,008*
No	72(87,8)	65 (73)		
Suicide Attempt				
Yes	10 (12,1)	6 (6,7)	=0,407	0,499*
No	72 (87,8)	83 (93,3)		
Shift Working				
Yes	20(24,3)	23 (25,8)	=3,283	0,070*
No	62(75,6)	66 (74,2)		

n: number

* chi squaretest

TABLE 2: Comparing scale scores according to groups

	Patient	Control	p
	n±SS	n±SS	
BAS	24,55 ±15,30	15,62 ±10,39	0,003*
BDI	16,85 ±13,48	10,95 ±9,71	0,052*
RSLSS	30,47 ±7,45	7,24 ±9,63	0,000*
BSIS	4,40 ±7,54	2,60 ±4,60	0,971*

n: number

SD: Standard Deviation

*MannWhitney U Test

TABLE 3: Comparing scale scores according to stages of RLS in the patient group

		BAS			BDI			BSIS				Adjusted P value
		Mean±SD	H	P	Mean±SD	H	P	Mean±SD	H	P		BDI
RLS Stage	Stage 1 (1)	16,50±16,50	4,741	0,192*	8,00 ±10,03	10,269	0,016*	1,33 ±2,80	3,009	0,390*	1-2	0,536**
	Stage 2 (2)	22,10±16,80			16,73±14,56			5,78 ±9,12			1-3	1,000**
	Stage 3 (3)	30,40±11,42			13,90±8,42			1,50 ±3,74			1-4	0,009**
	Stage 4 (4)	31,80±10,10			33,80±5,84			8,60 ±8,47			2-3	1,000**
											2-4	0,151**
											3-4	0,148**

*Kruskal-Wallis H test

**Mann Whitney U Test

TABLE 4: Scale correlations of the patients groups

	BAS		BDI		RSLSS		BSIS	
	r	p	r	p	r	p	r	p
BAS	1							
BDI	0,708**	0,000	1					
RSLSS	0,323*	0,042	0,323*	0,042	1			
BSIS	0,645**	0,000	0,653**	0,000	0,115	0,479	1	