

# THE IMPACT OF SLEEP DISTURBANCES ON THE QUALITY OF LIFE IN THE PATIENTS WITH PARKINSON'S DISEASE

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**Keywords:** Parkinson's disease, sleep disturbances, quality of life

**Abstract:** In this study, we review the sleep disturbances in PD patients. We evaluate the sleep disorders, and the interaction with gender, Yahr and Hoehn stage in PD, the quality of life. We evaluated 74 patients, with a mean age of 62,4 years old. 65% of patients presented sleep disturbances and 53% patients presented nocturnal disturbances. Insomnia was present in 36,5% of the study patients. Good quality of life presented 10,8%, equally distributed between the two genders.

**Cuvinte cheie:** boala Parkinson, tulburări de somn, calitatea vieții

**Rezumat:** În acest studiu am evaluat tulburările de somn la pacienți cu boala Parkinson (BP). Am evaluat tulburarea de somn și corelată cu sexul, stadiul Hoehn și Yahr al bolii, calitatea vieții. S-au inclus în studiu 74 pacienți, cu vârsta medie 62.4 ani. 65% din pacienți au prezentat tulburări de somn și 53% tulburări nocturne. Insomnie au prezentat 36.5% din pacienți. Calitatea bună a vieții au prezentat 10.8%, egal repartizată în cele două sexe.

## INTRODUCTION

The sleep disturbances are frequently encountered in the patients with Parkinson's disease (PD) and these have a negative impact on quality of life. The evaluation of sleep disturbances in these patients is complex, as sleep may be affected by a host of primary sleep disorders, other primary medical or psychiatric conditions, and reactions to medications, aging or the neuropath physiology of PD itself.

Disturbances of sleep are highly prevalent in Parkinson's disease (PD), affecting up to 88 percent of community dwelling patients.(1) Furthermore, in studies that examine the impact of PD on quality of life (QoL), sleep difficulties are independent and important predictors of poor quality of life.(2) In fact, most reports suggest that sleep disturbance, depression and lack of independence are the primary determinants of poor quality of life.(3)

In addition, sleep disturbances contribute to excessive daytime sleepiness (EDS) and poor daytime functioning as well as patients' reduced enthusiasm for daily events. Adverse effects have also been observed in the sleep habits and the quality of life of their spousal caregivers.(4,5)

Insomnia is defined as an almost nightly complaint of an insufficient amount of sleep or not feeling rested after sleeping. Obviously, the interactions between PD and sleep are complicated and many PD patients who complain of sleep disturbance may qualify for a diagnosis of insomnia though they have other primary sleep disturbances such as REM Sleep Behavior Disorder (RBD) or Periodic Limb Movements of Sleep (PLMS) and Restless Legs Syndrome (RLS).

Furthermore, sleep disturbances may be related to factors such as depression, poor sleep hygiene, nocturia, pain, dystonia, akinesia, difficulty turning in bed, reactions to medications, and vivid dreaming.(6) If no other cause is found, the insomnia is classified as idiopathic. Daytime fatigue and excessive sleepiness may be related to insomnia, depression,

medication effects, other medical illnesses as well as to other primary sleep disturbances such as Sleep Disordered Breathing (SDB).

## PURPOSE

The purpose of this study was to evaluate the sleep disturbances in the patients with PD and to find the correlation between sleep problems, quality of life and clinical features of PD patients.

## METHODS

We evaluated 74 patients with PD without cognitive disorders (MMSE $\geq$ 28). The Parkinson's disease diagnostic was established according to the Parkinson's disease criteria. The patients who agreed to participate in this evaluation signed the inform consent. These patients had a complete neurological examination and a structured questionnaire interview which was performed by neurologists. Patients with atypical parkinsonian disorders, drug induced parkinsonism, vascular pseudoparkinsonism, and those with parkinsonism after dementia were excluded from this study.

The assessment included the Hoehn and Yahr scale (7), the Schwab and England disability scale (8), the motor part of the unified Parkinson's disease rating scale (UPDRS) (9) and the mini mental state examination (MMSE).(10)

The sleep disturbances were evaluated using Parkinson's disease Sleep Scale (PDSS).

Parkinson's disease sleep scale (PDSS) is a 15-item visual analogue scale that assesses the profile of nocturnal disturbances in Parkinson's disease (PD) patients. It surveys six overlapping domains, insomnia and sleep fragmentation, motor symptoms, neuropsychiatric symptoms, nocturnal restlessness, dystonia, pain, urinary symptoms, and daytime sleepiness.(11)

All the data was analyzed statistically for the factors that correlates with sleep disturbances and quality of life.

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The statistically analyzed was processed with Med Calc. The results were explicated by percent and the items correlation was identified by correlation rate.

### RESULTS

We evaluated 74 patients with PD without cognitive disorders. The gender distribution was 36 male (49%) and 38 female (51%).

The mean age was 67,4 years old, 69,2 years in female group and 65,6 in men group.

48 patients (65%) presents sleep disorders and 39 patients (53%) present nocturnal disturbances.

The poor quality of life was correlated with sleep disturbances for 83% patients (40 patients). 85,2% female with PD was with poor quality of life, and only 10,8% of patients with good quality of life, 5,4% equal male and female (table no. 1).

**Table no. 1. Sleep disturbances and quality of life**

	Low quality of life	High quality of life
<b>Female</b>	23 (85.2%)	4 (14.8%)
<b>Male</b>	17 (80.9%)	4 (19.1%)
<b>Sleep disturbances</b>	40 (83%)	8 (17%)
<b>Nocturnal disturbances</b>	33 (84.6%)	6 (15.4%)
<b>Excessive daytime sleepiness</b>	19 (82.6%)	4 (17.4%)
<b>Insomnia</b>	18(66.7%)	9 (33.3%)
<b>Sleep attacks</b>	11 (68.8%)	5 (31.2%)
<b>Absent sleep disturbances</b>	6 (23.1%)	20 (76.9%)

31% of patients have excessive daytime sleepiness and 82.6% recognized a poor quality of life. Insomnia has 36.5% of patients, 66.7% recognized a poor quality of life. Sleep attacks present 21.6% of patients and 68.8% recognized a poor quality of life.

35% of patient has not sleep disturbance. 23.1% declare have a poor quality of life, and 76.9% good quality of life.

**Table no. 2. The patients' distribution in PD scale and sleep disorders pattern**

Hoehn-Yahr Scale	No. (%) patients	No. (%) patients with sleep disturbance	No. (%) patients with nocturnal disturbances
<b>I</b>	9 (12.1%)	3 (30%)	2 (22.2%)
<b>II</b>	12 (16.2%)	6 (50%)	4 (33.3%)
<b>III</b>	32 (43.2%)	22 (68.7%)	19 (86.4%)
<b>IV</b>	21 (28.4%)	17 (80.9%)	14 (76.2%)
<b>Total</b>	74 (100%)	48 (65%)	39 (53%)

The patients have an unequal distribution in Hoehn and Yahr scale. A most representative stage was for patients in stage III Hoehn-Yahr, 43,2% patients. In stage I Hoehn-Yahr 33.3% have sleep disturbance, and 22.2% have nocturnal disturbances. In stage II Hoehn-Yahr, din total of 12 patients, 50% have sleep disturbances and 33% have nocturnal disturbances. In stage III Hoehn-Yahr, of total 32 patients, 68,8% have sleep disturbances and 59,4% have nocturnal

disturbances. In stage IV Hoehn-Yahr, of total 21 patients, 81% have sleep disturbances and 66,7% have nocturnal disturbances.

The sleep disturbances present a linear increased with Hoehn - Yahr stage (table no. 2).

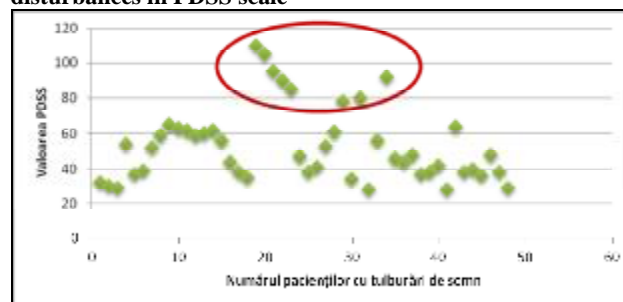
**Table no. 3. Correlation: sleep disturbances and quality of life**

Correlation	Poor quality of life	Good quality of life
Female with sleep disturbances	1	-1
Male with sleep disturbances	0.5	-0.5
Nocturnal disturbances	1	-1
Absent sleep disturbances	-1	1
Hoehn-Yahr stage I	0	1
Hoehn-Yahr stage II	0.5	0.5
Hoehn-Yahr stage III	1	0.5
Hoehn-Yahr stage IV	1	0

Calculating the index of correlation for good or poor quality of life in study lot, the female gender, nocturnal disturbances, Hoehn-Yahr stage III and IV recognized a high correlation with poor quality of life and in contrast the absence of sleep disturbances and Hoehn-Yahr stage I recognized a high correlation with good quality of life. Hoehn-Yahr stage I does not correlate with poor quality of life. Hoehn-Yahr stage IV does not correlate with good quality of life. The association of gender and good quality of life has a negative correlation.

The patients with good quality of life have a distribution up to 70 points by PDSS scale (figure no. 1).

**Figure no. 1. The distribution of patients with sleep disturbances in PDSS scale**



### DISCUSSIONS

PD has a significant impact on quality of life and its evaluation is complex. In Chaudhuri et al study, with 89 men (62%) and 54 women (38%) a mean (SD) age was 67.0 years (range 38 to 89), and the duration of their disease was 6.0 (5.1) years (range 1 to 26). The Hoehn and Yahr score was 2.7 (0.7), range 1 to 4. Subjects included the entire spectrum of Parkinson's disease from newly diagnosed to treated patients in the advanced stages.(12) The results of this analysis were similar but, as might be expected, disease severity replaced disability as a predictor of QoL. In addition, postural instability, which is one of the key criteria for staging in the Hoehn and Yahr scale and was therefore associated with higher Hoehn and Yahr scores ( $p < 0.005$ ), no longer additionally contributed to predicting QoL scores.(12)

In our study we evaluated 74 patients, with a mean age of 67,4 years old. The Hoehn and Yahr scores in our study was I to IV, 12,1% patients in Hoehn and Yahr scores I, 16,2% in Hoehn and Yahr scores II, 43,2% in Hoehn and Yahr scores III, 28,4% in Hoehn and Yahr scores IV.

Two major sources of dissatisfaction with the quality of life among Parkinsonian patients are the “locomotors disability” and the “nature of their sleep”. The main focus of research was directed towards the locomotors disability, but in the last two decades some progress has been made towards the understanding of sleep in PD patients. Sleep in Parkinson's disease is light and fragmented due to an increased skeletal muscle activity, disturbed breathing, impaired biological rhythm and REM-nonREM variations of the dopaminergic receptor sensitivity.(13)

In our study nocturnal disturbances present 39 patients (52,7%), 84,6% associated poor quality of life represented 44,6% of total group.

Insomnia is generally divided into difficulty falling asleep (sleep initiation), staying asleep (sleep maintenance) and awakening too early in the morning. While all three problems occur in patients with PD, sleep maintenance difficulties are the most common, affecting up to 74–88% of patients.(14,15)

Insomnia present 27 patients, represented 56% of patients with sleep disturbances and 36,5% about all study patients. 66,7% of patients with insomnia recognized poor quality of life.

Nearly 30% patients with PD may suffer from insomnia, resulting from the general tendency of the elderly to lose a continuous consolidated period of sleep every night, compounded by motor problems of PD, nocturnal, medication effect, any other primary sleep disorders and most of all coexistent depression.(16)

In our study 16 patients present sleep attacks represented 33.3% about patients with sleep disturbances and 68,8% of them recognized poor quality of life.

In our study Hoehn and Yahr scores have a good correlation with quality of life. High score was correlated with poor quality of life. The association of sleep disturbances with sex and good quality of life has a negative correlation.

The sleep disturbances impact the quality of life in our study group of patients with Parkinson's disease.

### CONCLUSIONS

1. The sleep disturbances, especially nocturnal problems, in the patients with PD influence the quality of life.
2. In our study, the poor quality of life was correlated with sleep disorders, female gender and disease severity.

### REFERENCES

1. Factor SA, McAlarney T, Sanchez-Ramos JR, Weiner WJ. Sleep disorders and sleep effect in Parkinson's disease. *Mov Disord.*1990;5:280-285.
2. Scaravelli T, et al. Health related quality of life and sleep disorders in Parkinson's disease. *Neurol Sciences.* 2003 Oct;24(3):209-210.
3. Karlsen KH, Tanberg E, Arslan D, Larsen JP. Health related quality of life in Parkinson's disease: A prospective longitudinal study. *J Neurol Neurosurg Psychiatry.* 2000 Nov;69:584-589.
4. Pal PK, et al. Nocturnal sleep disturbances and daytime dysfunction in patients with Parkinson's disease and in their caregivers. *Parkinsonism Relat Disord.* 2004 Mar;10(3):157-168.
5. Smith MC, Ellgring H, Oertel WH. Sleep disturbances in Parkinson's disease patients and spouses. *J AM Geriatr Soc.*1997;45:194-199.[PubMed]
6. Lowe AD. Sleep in Parkinson's disease. *J Psychosom Res.* 1998;44(6):613-617.
7. Hoehn MM, Yahr MD. Parkinsonism: onset, progression and mortality. *Neurology.* 1967;17:427-42.
8. Schwab RS, England AC. Projection technique for evaluating surgery in Parkinson's disease. In: Gillingham FJ, Donaldson IML, eds. *Third Symposium on Surgery in Parkinson's disease.* Edinburgh: Livingstone; 1969. p. 152-7.
9. Fahn S, Elton RL, members of the UPDRS Development Committee. Unified Parkinson's disease rating scale. In: Fahn S, Marsden CD, Calne DB, et al, eds. *Recent developments in Parkinson's disease.* Vol 2. Florham Park, NJ: Mac-Millan Healthcare Information; 1987. p. 153-63.
10. Folstein MF, Folstein SE, McHugh PR. Mini-mental state. A practical method for grading the cognitive state of patients for the clinician. *J Psychiatr Res.* 1975;12:189-98.
11. Chaudhuri KR, Pal S, DiMarco A, Whately-Smith C, Bridgman K, Mathew R, Pezzela FR, Forbes A, Hög B, Trenkwalder C. The Parkinson's disease sleep scale: a new instrument for assessing sleep and nocturnal disability in Parkinson's disease. *J Neurol Neurosurg Psychiatry.* 2002;73:629-635.
12. Chaudhuri KR, SPal, ADiMarco, Whately-Smith C, Bridgman K, Mathew R, Pezzela FR, Forbes A, Hög B. The Parkinson's disease sleep scale: a new instrument for assessing sleep and nocturnal disability in Parkinson's disease *J Neurol Neurosurg Psychiatry.* 2002;73:629-635.
13. Askenasy JJM. Article first published online: 29 JAN 2009. DOI:10.1111/j.1600-0404.1993.tb04095.x.
14. Factor SA, McAlarney T, Sanchez-Ramos JR, Weiner WJ. Sleep disorders and sleep effect in Parkinson's disease. *Mov Disord.* 1990;5:280-285.
15. Oerlemans WG, de Weerd AW. The prevalence of sleep disorders in patients with Parkinson's disease: A self-reported, community-based survey. *Sleep Med.* 2002;3:147-149.
16. Larsen JP, Tandberg E. Sleep disorders in patients with Parkinson's disease: Epidemiology and management. *CNS Drugs.* 2001;15:267-275.