

Assessment of psychological, cognitive parameters and sleep quality in newly diagnosed patients with Parkinson's disease



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Submission: 25-10-2024

Revision: 31-10-2024

Publication: 01-12-2024

ABSTRACT

Background: Parkinson's disease is a neurodegenerative disorder that occurs due to the damage of the neurons that secrete the neurotransmitter called dopamine and the cases are growing worldwide. The studies on the observation of the non-motor symptoms in patients with Parkinson's disease are sparse in the Indian context. The estimated prevalence of Parkinson's disease in India is 7 million. **Aims and Objectives:** The present study was undertaken to assess the psychological and cognitive parameters and sleep quality in newly diagnosed patients with Parkinson's disease. **Materials and Methods:** A total of 30 newly diagnosed patients within the age group of 35–70 years, with Parkinson's disease were part of the study after obtaining the informed consent. Thirty age and gender-matched healthy participants were also part of the study. Cognitive parameters were recorded using spatial and verbal memory tests. The psychological parameters were collected using the generalized anxiety disorder seven questionnaires which is a self-administered questionnaire. Sleep quality was assessed using an insomnia severity questionnaire which is a seven-item questionnaire. **Results:** The anxiety scores were significantly high in the patients with Parkinson's disease when compared with the controls. The sleep quality was significantly poor in the Parkinson's patients compared to the controls. Spatial and verbal memory scores were significantly lower in Parkinson's patients than in the controls. **Conclusion:** The present study results support that the non-motor symptoms are also prominent in patients with Parkinson's disease. Higher scores of anxiety, lower scores of spatial and verbal memory, and poor sleep quality were observed in patients with Parkinson's disease. The study recommends further detailed studies in this area to consider these parameters also in managing Parkinson's disease.

Key words: Parkinson's disease; Cognitive functions; Spatial memory; Verbal memory; Sleep; Stress

INTRODUCTION

Parkinson's disease is a neurodegenerative disorder that occurs due to the damage of the neurons that secrete the neurotransmitter called dopamine and the cases are growing worldwide. It has second place in the progressive neurodegenerative diseases throughout the world. The

symptoms of Parkinson's disease include motor and non-motor symptoms. Motor symptoms include both hyperkinetic and hypokinetic movements whereas non-motor symptoms include sleep disturbances, autonomic disturbances, decline in cognitive functions, and psychological disorders such as anxiety and depression.¹ Non-motor symptoms adversely affect the quality of life

Access this article online

Website:

<http://nepjol.info/index.php/AJMS>

DOI: 10.3126/ajms.v15i12.71092

E-ISSN: 2091-0576

P-ISSN: 2467-9100

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of the patients. Hence, they also have to be considered equally important in managing Parkinson's patients.² Interestingly, it was reported that Parkinson's disease affects multiple systems including the gastrointestinal system.³ Further, pain was also reported as a non-motor symptom which was not much studied.⁴ The management of Parkinson's disease is not so easy as the choice of drugs is limited. Especially, Levo-Dopa is used in the management of Parkinson's disease. However, long-term use of this drug causes dyskinesia in most of the patients. Hence, other methods, such as brain stimulation and surgical methods, exist.⁵ In recent years, alternative therapies have also shown promising improvement in the management of Parkinson's patients.⁶ In recent years, non-invasive devices that stimulate the brain areas also have immense importance.⁷ The studies on the observation of the non-motor symptoms in patients with Parkinson's disease are sparse in the Indian context. The estimated prevalence of Parkinson's disease in India is 7 million.⁸ Hence, the present study was undertaken to assess the psychological, and cognitive parameters and sleep quality in newly diagnosed patients with Parkinson's disease.

Aims and objectives

The present study aimed to observe the psychological and cognitive parameters and sleep quality in newly diagnosed patients with Parkinson's disease.

MATERIALS AND METHODS

The present study is an observational study. A total of 30 newly diagnosed patients within the age group of 35–70 years, with Parkinson's disease, were part of the study after obtaining the informed consent. Thirty age and gender-matched healthy participants were also part of the study. The institutional human Ethical Committee approved the study protocol No EC/411-4/12. The participants were explained the importance of the study before obtaining the informed consent. Participants within the age group of 30–80 years and willing to participate were included in the study. Participants with any severe complications were excluded from the study. The psychological parameters were collected using the generalized anxiety disorder-7 (GAD-7) questionnaire which is a self-administered questionnaire. Cognitive parameters were recorded using spatial and verbal memory tests. These tests include projecting 10 slides of pictures or words for 2 min. Then there will be a pause for 1 min where the participant keeps busy asking to solve mathematical problems. Immediately after 1 min, they will be asked to recall the pictures or words that they have seen earlier. Each correct answer is given a score of

one. Sleep quality was assessed using an insomnia severity questionnaire which is a seven-item questionnaire. It is a self-administered questionnaire.

Statistical analysis

Data were analyzed using the SPSS 21.0 version. Student t-test was used to compare the significance of the difference in the scores. A probability value of <0.05 was considered significant.

RESULTS

Demographic data are presented in Table 1. The age, height, and weight of the participants in the control and cases were not significantly different. Psychological and cognitive parameters and sleep quality were compared in Table 2. The anxiety scores were significantly high in the patients with Parkinson's disease when compared with the controls. The sleep quality was significantly poor in the Parkinson's patients when compared with the controls. Spatial and verbal memory scores were significantly lower in Parkinson's patients than in the controls.

DISCUSSION

The present study was undertaken to assess the psychological and cognitive parameters and sleep quality in newly diagnosed patients with Parkinson's disease. The anxiety scores were significantly high in the patients with Parkinson's disease when compared with the controls. The sleep quality was significantly poor in the Parkinson's patients compared to the controls. Spatial and verbal memory scores were significantly lower in Parkinson's

Table 1: Comparison of the demographic parameters of the participants

Parameter	Control (n=30)	Cases (n=30)	P-value
Age (years)	54.75±6.32	53.88±4.36	0.7519
Height (cm)	175.14±11.47	171.14±14.37	0.5755
Weight (kg)	76.67±21.38	71.44±14.28	0.5508

Data was presented as mean and SD

Table 2: Psychological, cognitive parameters, and sleep quality comparison in healthy controls and cases

Parameter	Control (n=30)	Cases (n=30)	P-value
GAD-7 scores	9.50±2.14	16.86±2.06	0.0001***
ISI score	8.18±2.09	15.8±3.08	0.0001***
Spatial memory	5.44±2.07	3.33±1.41	0.0224*
Verbal memory	5.44±0.88	3.88±1.25	0.0085**

Data were presented as mean and SD. *P<0.05 is significant, **P<0.01 is significant, ***P<0.001 is significant, GAD-7: Generalized anxiety disorder-7

patients than in the controls. It was reported that GAD is observed more frequently in patients with Parkinson's disease.⁹ Another study reported that though anxiety is commonly observed in Parkinson's patients the studies in this area are relatively less. Further, increased anxiety causes deterioration of the quality of life of these patients. Hence, while managing Parkinson's patients, the management of anxiety has to be considered.¹⁰ Negative psychological emotions like depression and mood disorders are reported in Parkinson's patients by earlier studies.¹¹ Cognitive impairment is the most common non-motor symptom observed in Parkinson's patients.¹² The most important cognitive functions affected include attention, execution, spatial and verbal memory, and working memory.¹³ This decline in cognitive functions is progressive and deteriorates the quality of life of the patients with Parkinson's patients.¹⁴ Parkinson's patients commonly experience insomnia, restless legs syndrome, REM sleep disorders, and daytime sleepiness.¹⁵ Lack of sleep increases stress and anxiety and it will continue like a vicious cycle.¹⁶ These disorders cause a decrease in the quality and quantity of sleep and ultimately the quality of life.¹⁷ Another important and under-recognized non-motor symptom reported is constipation.¹⁸ However, this parameter is not studied in our study. The present study results support that the non-motor symptoms are also prominent in patients with Parkinson's disease. Higher scores of anxiety, lower scores of spatial and verbal memory, and poor sleep quality were observed in patients with Parkinson's disease. The study recommends further detailed studies in this area to consider these parameters also in managing Parkinson's disease.

Limitations of the study

The sample size of the study was less. Hence, generalization of the results is not possible.

CONCLUSION

The present study results support that the non-motor symptoms are also prominent in patients with Parkinson's disease. Higher scores of anxiety, lower scores of spatial and verbal memory, and poor sleep quality were observed in patients with Parkinson's disease. The study recommends further detailed studies in this area to consider these parameters also in managing Parkinson's disease.

ACKNOWLEDGMENT

The authors would like to acknowledge the institute for their support throughout the study. Special thanks to the participants of the study.

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AL, VR- Design of the study, review of literature, analysis, and preparing the manuscript; **DK, YGR**- Data collection, preparing the manuscript; **SSKG, SGK, MJK**- Analysis and preparing the manuscript.

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Source of Funding: None, **Conflicts of Interest:** None.