

## Original Article

# A Study on Non-motor Manifestations in Young Onset Parkinsons Disease (YOPD) in Eastern Indian Population

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**Background :** Non-motor Symptoms (NMS) are extremely common in Young Onset Parkinson Disease (YOPD) with high incidence of neurobehavioral and autonomic dysfunction which should be given greater emphasis as it will affect the Quality of Life.

**Materials and Methods :** This is a cross-sectional study in which all consecutive patients of age less than 50 years satisfying the UPKRDS Diagnostic criteria for Idiopathic Parkinson's Disease (IPD) attending the Neurology Outpatient services at a super speciality clinic during study period July 1, 2021 to April 30, 2022 were included in the sample. All secondary causes of parkinsonism like drug induced, multi-infarct state and normal pressure hydrocephalus were excluded. All patients were examined, and demographic data and non-motor symptoms were documented using the Non-motor Scale (NMSS) of International Parkinson's and movement disorder society and modified Hoehn & Yahr staging used for staging.

**Results :** A total 32 patients were diagnosed with YOPD during the study period. Out of which 19 (59.37%) were Males and 13 (40.32 %) were Females. Majority of the patients were in the age group of 40-50 years (84%) and onset of illness in 1 month to 5 years (78.17%) with 37% each of patients were in the H & Y Stages I-1.5 and 1.5-2. Common Non-motor Symptoms (NMS) observed were anxiety (71.87%), memory loss (59.37%) and depression (56.25%). Most of the patients had one or more autonomic symptoms and sleep disturbances.

**Conclusion :** Non-motor Symptoms were present in all patients (100%) with anxiety, memory loss, depression and constipation are being the commonest of the NMS.

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**Key words :** Non-motor Manifestations, Young Onset Parkinsons Disease (YOPD).

**P**arkinson's Disease (PD) is a neurodegenerative disorder characterized by bradykinesia, rest tremor, rigidity and postural instability along with variety of Non-motor Symptoms (NMS)<sup>1</sup>. It is usually considered as age related disease with mean age in early to mid 60s, but it can occur in early life also<sup>2</sup>. Based on age of onset, PD can be divided into early and late [Late Onset PD (LOPD)]. Early Onset PD (EOPD) further subdivided into Juvenile Onset PD (JOPD) (before 21 years) and Young Onset PD (YOPD) (between 21-40 years of age) while onset after 60 years defines LOPD<sup>3-5</sup>. Due to lack of consensus, the maximal age for YOPD has varied from 40 to 55<sup>3,6,7</sup> and minimal age for LOPD has varied from 50 to 70<sup>3,8,9</sup>.

The prevalence of PD in the Western World has been reported to range from 130 to 200 per 100,000 in community-based studies but reported as high as

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### Editor's Comment :

- Non-motor manifestations are very commonly seen in YOPD. Depression, anxiety and constipation are the commonest to be seen in this study.

2000/100,000 in individuals over 80 years of age<sup>10-13</sup> and YOPD represents 5-7% of this. As per WHO (14 June, 2022) prevalence of Parkinson disease has doubled in the past 25 years with global estimates in 2019 showing over 8.5 million individuals living with PD, 5.8 million disability-adjusted life years and 329,000 deaths.

YOPD and LOPD are similar in both clinical and pathological features, except for higher rate of treatment-related dyskinesias<sup>14</sup>, slow onset of progression and impact on Quality of Life (QOL) especially due to NMS<sup>14-18</sup>. YOPD patients facing occupational and life style challenges than LOPD not only due to motor symptoms but also due to NMS like depression, sexual dysfunction, marital conflict, loss of occupation and future uncertainty<sup>19-21</sup>. It also leads to behavioural disorder like addiction, impulse control disorders like gambling, compulsive shopping and sexual addiction.

## MATERIALS AND METHODS

This is a cross sectional study in which all consecutive patients less than fifty years satisfying the UPKRDs Diagnostic criteria for Idiopathic Parkinson's Disease (IPD) attending the Neurology Outpatient services at a Super Speciality Neurology Clinic, Durgapur during study period July 1, 2021 to April 30, 2022 were included in the sample. All patients were examined and demographic data and Non-motor Symptoms were documented using the Non-motor Scale (NMSS) of International Parkinson's and movement disorder society and modified Hoehn & Yahr staging used for staging. Local Ethical committee clearance was taken by Asansol Durgapur Ethics Committee before starting the study, Letter no -(15/21). Exclusion criteria- All secondary causes of parkinsonism like drug related, multi-infarct state and normal pressure hydrocephalus were excluded.

## RESULTS

A total 32 patients were diagnosed with YOPD and satisfied the inclusion criteria of study. Out of which 19 (59.37%) were Males and 13 (40.32%) were Females. In 27 patients were within 40-50 years (84%) and remaining 5 patients were within 30-39 years (16%). The Hoehn & Yahr (H&Y) stages were 1-1.5 (37%), 2(37%) and least common H & Y stage was 3-5 (25%) (Table 1). Onset of illness was most commonly between 1 month - 5 years (78.17%) followed by 6 years -10 years (21.87%) and 11years - 15 years (6.25%) in descending order (Fig 1).

Non-motor Symptoms (Table 2) seen in descending order were Memory loss (59.37%), constipation (46.87%), Sexual dysfunction (40.62%), Anxiety

Hoehn & Yahr Stage	Patient number (Total-32)
1 - 1.5	12
2 - 3	12
3 - 5	8

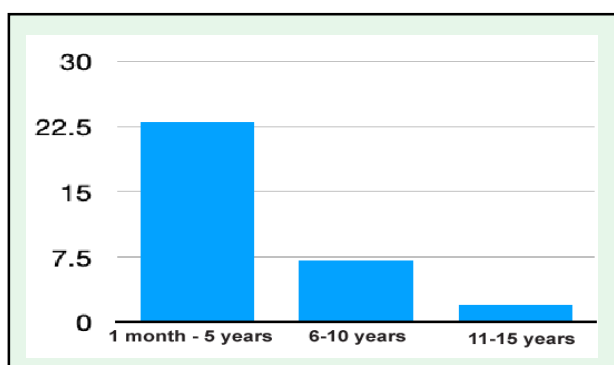


Fig 1 — Onset of illness

Non-motor Symptoms	Percentage of Study Population (%)
ANXIETY	71.87
MEMORY LOSS	59.37
DEPRESSION	56.25
CONSTIPATION	46.87
NOCTURIA	43.75
INSOMNIA	43.75
SEXUAL DISORDER	40.62
DAY TIME SLEEPINESS	31.25
EXCESSIVE SWEATING	31.25
FROZEN SHOULDER	31.25
URINARY FREQUENCY	28.12
LOSS OF TASTE & SMELL	28.12
PANIC ATTACK	18.75
URINARY URGENCY	15.62
RESTLESS LEG SYNDROME	12.05
FAINTING	12.05
DIZZINESS	9.37
REM SLEEP BEHAVIOURAL DISORDER	9.37
HYPER SALIVATION	3.12

(71.87%), Depression (56.25%), Nocturia (43.75%), Urinary Frequency (28.12%), Insomnia (43.75%), Urinary Urgency (15.62%), Day Time Sleepiness (13.25%), Loss of Taste and Smell (28.12%), Excess Sweating (31.25%), Frozen Shoulder (31.25%), Restless Leg Syndrome (12.05%), Dizziness (9.37%), Panic Attack (18.75%), Fainting (15.05%), RBD (9.37%) and Hypersalivation (3.12%).

## DISCUSSION

YOPD is almost similar to LOPD in clinical picture except in slow disease progression<sup>22</sup>, less falls, freezing<sup>3</sup> and increased treatment related motor complications<sup>14</sup>. In this study, it is only focussed on clinical profile of Non-motor Symptoms of YOPD regarding their relation to stage and duration of disease. Out of 32 patients included in this study majority are coming under the age group of 40-50 years (84%) followed by 30 -39 years. Onset of illness in majority of patients are 1 month to 5 years (78.17%) followed by 6 years -10 years (21.87%) and 11years-15 years (6.25%) with equal distribution in both 1-1.5 and 2 H&Y staging (37% each) and remaining 26% patients are in 3 -5 stage. NMS included in this study consist of autonomic dysfunction, sleep disorders, psychological and behavioural disorders, sensory and cognitive symptoms and all patients were shown one or more NMS.

The most common NMS is Anxiety (71.87%) followed by Memory loss (59.37%), Depression (56.25%) and Constipation (46.87%) compared to a study conducted in Indian populations which shows Depression (45.6%), Anxiety (45.4%) and Apathy

(30.5%)<sup>23</sup>. A similar study in USA shows similar rate of Depression (48.3%)<sup>24</sup>. YOPD usually defines between 21-40 years but there is lack of consensus regarding the upper limit which varies from 40 to 55 years in different studies. We considered the upper limit of age as 50 years. Cognitive decline is less in YOPD compared to LOPD<sup>25,26</sup>, even though it is more dependent on age. In this study Memory loss was the 3rd most common NMS which is probably due to the increased age of patient (84% is between 40-50 years). Genetic study was not included in this study even though genetic predisposition is well recognised with age of onset-younger the age higher the genetic association<sup>27</sup>. Family history is reported in 20% of YOPD patients compared to 6.9% of LOPD patients, and the age-specific risk of PD is 7.8-fold higher in the relatives of patients with YOPD compared to 2.9-fold among the relatives of patients with LOPD<sup>7,28</sup>. Many genes are considered causing PD which mainly include SNCA, LRRK2, GBA. Duplication of PARK 1 gene is associated with NMS like severe psychiatric features. In 1/3<sup>rd</sup> of the study population frozen shoulder was seen and panic attack was documented in 18.75% of the study population. In several studies restless leg syndrome had a higher rate<sup>5,9,18,29-33</sup> compared to 12.05% in our study. Other common manifestations were constipation, urinary urgency, frequency, sexual dysfunction, hyper salivation, excessive sweating, fainting and loss of smell and taste. Sleep disturbances like REM Behavioural Disorders, excessive day time sleeping and insomnia were seen commonly in the study population. NMS in YOPD has to be diagnosed early and treated because it affects the peak and productive years of life which leads to loss of employment, social and family conflicts, loss of self-esteem and various addictive behavioural problems. There is a diagnostic challenge in YOPD mainly due to rarity and age of onset because PD is mainly considered as a disease of elderly and this leads to multiple neurologist visit, multiple investigations and delay in diagnosis and treatment<sup>19,6</sup>.

Limitations: Small sample size, cross sectional study, genetic study is not done in the patients

### CONCLUSION

Non-motor Symptoms were seen in all the patients with Young Onset Parkinsons Disease (YOPD) in our study. Anxiety, Memory Loss, Depression and Constipation are the commonest non motor manifestations.

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**Conflict of interest :** There is no conflict of interest.

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