ASSESSMENT OF QUALITY OF LIFE AND MOTOR SKILLS OF PATIENTS WITH PARKINSON'S DISEASE: EARLY VERSUS LATE-ONSET PARKINSON'S DISEASE

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Júlia Morais Zandavali [1]
Eduarda Menin da Silva [2]
Valentina Lima Cartaxo da Silva [3]
Eduardo Lago da Costa Loureiro [4]
Bruna Fernanda Dysarz Moretti [5]
Octávio Augusto Ormeneze [6]
Renata Ramina Pessoa [7]
Fabiana Antunes de Andrade [8]

ABSTRACT: Background: Parkinson's disease (PD) is a chronic neurodegenerative condition that affects the central nervous system and is extensively studied through multidisciplinary approaches. However, there is limited research on the differences in clinical manifestations and quality of life between patients of different age groups, particularly those with early-onset PD. Objective: This study aimed to compare the clinical characteristics of early- and late-onset PD, such as tremor, slow running and involuntary movements, with a particular focus on factors influencing motor deficits and quality of life. Methods: An observational, cross-sectional study was conducted using the PDQ-8, a validated, self-administered questionnaire for assessing quality of life, alongside other relevant questions. Results: Data from 105 patients (56.2% men and 43.8% women) were collected in Brazil, 79% of whom had late-onset PD. Results indicated that the diagnostic delay was significantly longer in the early-onset group (7.5 years) than in the late-onset group (2.0 years; p=0.010).Quality of life scores were worse in early-onset patients (41.1 points) than in late-onset patients (33.1 points; p=0.039). Interpersonal problems were reported more frequently in early-onset PD (60% vs. 27%; p=0.029), as were involuntary movements (50% vs. 25.3%; p=0.037). Conclusion: These findings suggest that early-onset PD patients experience a greater negative impact on

[1] Graduanda em medicina. Universidade Positivo (UP).
E-mail: juliazandavali02@gmail.com, ORCID: https://orcid.org/0009-0009-0850-8558
[2] Graduanda em medicina. Universidade Positivo (UP).
E-mail: dudaMenin@gmail.com, ORCID: https://orcid.org/0000-0002-7499-9270
[3] Graduanda em medicina. Universidade Positivo (UP).
E-mail: valentina.silva@cs.up.edu.br, ORCID: https://orcid.org/0000-0003-3165-5336
[4] Graduando em medicina. Universidade Positivo (UP).
E-mail: edulc@live.com, ORCID: https://orcid.org/0009-0000-5006-1627
[5] Graduanda em medicina. Universidade Positivo (UP).
E-mail: brunamoretti1312@gmail.com, ORCID: https://orcid.org/0009-0004-8275-6051
[6] Graduando em medicina. Universidade Positivo (UP).
E-mail: octavio.ormeneze@gmail.com, ORCID: https://orcid.org/0009-0000-4483-6262
[7] Mestre. Docente da disciplina de Neurologia da Universidade Positivo.
E-mail: rena-ta.raminapessoa@gmail.com, ORCID: https://orcid.org/0009-0006-1254-2546
[8] Doutora. Docente do curso de Medicina da Universidade Positivo.
E-mail: fabiana.una@gmail.com, ORCID: https://orcid.org/0000-0003-4116-2324

quality of life, both regarding motor skills and relationships. It also shows more severe motor skills impairment compared to those with late-onset PD, possibly a consequence of longer time between first symptoms and diagnosis, or of longer treatment with Levodopa. Thus, emphasizing the need for targeted interventions to address these challenges several strategies can be considered such as advances in biomarkers, genetic testing, and imaging techniques like dopamine transporter scans may allow for more accurate and earlier diagnosis that could lead to better strategies in treatment.
KEYWORDS: Parkinson's disease; Quality of life; Dyskinesia.

AVALIAÇÃO DA QUALIDADE DE VIDA E DAS HABILIDADES MOTORAS DE PACIENTES COM DOENÇA DE PARKINSON: DOENÇA DE PARKINSON DE INÍCIO PRECOCE VERSUS DOENÇA DE PARKINSON DE INÍCIO TARDIO

RESUMO: Introdução: A Doença de Parkinson (DP) é uma condição neurodegenerativa crônica que afeta o sistema nervoso central e é amplamente estudada por meio de abordagens multidisciplinares. No entanto, há uma pesquisa limitada sobre as diferenças nas manifestações clínicas e na qualidade de vida entre pacientes de diferentes faixas etárias, especialmente aqueles com DP de início precoce. Objetivo: Este estudo teve como objetivo comparar as características clínicas da DP de início precoce e tardio, como tremor, dificuldade para caminhar e movimentos involuntários, com um foco particular nos fatores que influenciam os déficits motores e a qualidade de vida. Métodos: Foi realizado um estudo observacional, transversal, utilizando o PDQ-8, um questionário validado e autoaplicável para avaliação da qualidade de vida, juntamente com outras questões relevantes. Resultados: Os dados de 105 pacientes (56,2% homens e 43,8% mulheres) foram coletados no Brasil, sendo 79% deles com DP de início tardio. Os resultados indicaram que o atraso no diagnóstico foi significativamente maior no grupo de início precoce (7,5 anos) do que no grupo de início tardio (2,0 anos; p=0,010). Os escores de qualidade de vida foram piores nos pacientes de início precoce (41,1 pontos) em comparação com os de início tardio (33,1 pontos; p=0,039). Problemas interpessoais foram mais frequentemente relatados nos pacientes com DP de início precoce (60% vs. 27%; p=0,029), assim como os movimentos involuntários (50% vs. 25,3%; p=0,037). Conclusão: Esses resultados sugerem que os pacientes com DP de início precoce apresentam um maior impacto negativo na qualidade de vida, tanto em relação às habilidades motoras quanto aos relacionamentos. Também mostram um comprometimento motor mais severo em comparação com os pacientes de início tardio, possivelmente como consequência do maior tempo entre os primeiros sintomas e o diagnóstico, ou do tratamento mais prolongado com Levodopa. Assim, enfatiza-se a necessidade de intervenções direcionadas para abordar esses desafios, considerando diversas estratégias como os avanços em biomarcadores, testes genéticos e técnicas de imagem, como a varredura do transportador de dopamina, que podem permitir um diagnóstico mais preciso e precoce, resultando em melhores estratégias de tratamento.
PALAVRAS-CHAVE: Doença de Parkinson; Qualidade de vida; Discinesia.

EVALUACIÓN DE LA CALIDAD DE VIDA Y LAS HABILIDADES MOTORAS DE LOS PACIENTES COM PARKINSON: ENFERMEDAD DE PARKINSON DE INICIO TEMPRANO FRENTE A ENFERMEDAD DE PARKINSON DE INICIO TARDÍO

RESUMEN: La enfermedad de Parkinson (EP) es una condición neurodegenerativa crónica que afecta al sistema nervioso central y se estudia ampliamente a través de enfoques multidisciplinarios. Sin embargo, existe una investigación limitada sobre las diferencias en las manifestaciones clínicas y la calidad de vida entre pacientes de diferentes grupos de edad, especialmente aquellos con EP de inicio temprano. Objetivo: Este estudio tuvo como objetivo comparar las características clínicas de la EP de inicio temprano y tardío, como temblores, dificultad para caminar y movimientos involuntarios, con un enfoque particular en los factores que influyen en los déficits motores y la calidad de vida. Métodos: Se realizó un estudio observacional, transversal, utilizando el PDQ-8, un cuestionario validado y autoadministrado para evaluar la calidad de vida, junto con otras preguntas relevantes. Resultados**:** Se recopilaron datos de 105 pacientes (56,2% hombres y 43,8% mujeres) en Brasil, de los cuales el 79% tenía EP de inicio tardío. Los resultados indicaron que el retraso en el diagnóstico fue significativamente mayor en el grupo de inicio temprano (7,5 años) en comparación con el grupo de inicio tardío (2,0 años; p=0,010). Los puntajes de calidad de vida fueron peores en los pacientes de inicio temprano (41,1 puntos) en comparación con los de inicio tardío (33,1 puntos; p=0,039). Se reportaron más problemas interpersonales en los pacientes con EP de inicio temprano (60% vs. 27%; p=0,029), así como más movimientos involuntarios (50% vs. 25,3%; p=0,037). Conclusión: Estos resultados sugieren que los pacientes con EP de inicio temprano experimentan un mayor impacto negativo en la calidad de vida, tanto en términos de habilidades motoras como en las relaciones interpersonales. También muestran un compromiso motor más severo en comparación con los pacientes de inicio tardío, posiblemente como consecuencia de un mayor tiempo entre los primeros síntomas y el diagnóstico, o de un tratamiento más prolongado con Levodopa. Por lo tanto, se enfatiza la necesidad de intervenciones específicas para abordar estos desafíos, considerando diversas estrategias, como los avances en biomarcadores, pruebas genéticas y técnicas de imágenes, como las exploraciones del transportador de dopamina, que podrían permitir un diagnóstico más preciso y temprano, resultando en mejores estrategias de tratamiento.
PALABRAS CLAVE: Enfermedad de Parkinson; Calidad de vida; Discinesia.

1. INTRODUCTION

Parkinson's disease (PD) is a multisystem neurodegenerative disease with multiple monoaminergic dysfunction and deficits in the dopaminergic, cholinergic, serotoninergic and noradrenergic systems. It is believed that the cardinal signs of the disease emerge when neuronal loss in the substantia nigra of the midbrain reaches approximately 60%. The presence of Lewy bodies and Lewy neurites, along with neuronal depletion, results in a dopamine deficiency, which plays a central role in the disease's pathophysiology and can be observed in imaging tests such as PET scans. This results in a dysfunction in the

regulation of the brain regions responsible for controlling movements (AGUILERA; VASCONCELOS, 2020).

The pathology progresses due to the aggregation of proteins in the substantia nigra of the midbrain, prominent loss of pigmented neurons is considered a hallmark of PD (PRASUHN *et al*., 2022). The typical clinical picture of the disease mainly involves the motor system, with dyskinesias, tremors and imbalances, and about 60% of dopaminergic neurons already degenerated when motor symptoms emerge. Besides, disorders of the autonomic nervous system, alterations in the sleep-wake cycle, memory and psychiatric disorders such as dementia and depression are also common.

The cause of the disease is still unknown, but it is believed that results from combined effects of environmental exposures and variations in genes regulating metabolic pathways, which contribute to susceptibility (BEN-SHLOMO *et al*., 2024). In early-onset diseases the genetic correlation is better established, with several established PD genes correlated to PD, such as *SNCA*, *LRRK2*, *VPS35*, and *RAB32*. Even though, the environmental can be a risk factor and the monogenic theory of PD must not be generalized (LIM; KLEIN, 2024).

Among the most common neurological diseases, PD affects approximately 4 million people worldwide, according to the World Health Organizations (WHO). With a predominance in males, idiopathic PD is more common with increasing age and can begin in different age groups. Its highest incidence of onset is between 50 and 65 years of age, and in hereditary forms, symptoms commonly begin before the age of 40 (BLOEM; OKUN, KLEIN, 2021). For this reason, idiopathic disease is divided into early- onset (EOPD) and late-onset (LOPD) presentations, with divergent classifications regarding the specific age groups that make up each group. Because EOPD affects people in the years of employment and fertility, it carries an additional set of societal consequences, like early retirement, sexual dysfunction, and psychosocial disruption (CAMERUCCI *et al*., 2021).

Although the cut-off age in the literature varies between 40 and 55 years for determining "early" (CAMERUCCI *et al*., 2021), it is seen that the presentation of symptoms and response to treatment with Levodopa differs depending on how early the onset of symptoms is (PITELLA *et al*., 2024). In addition, different biopsychosocial issues, such as influence on work, leisure and social life, must be considered when dealing with younger patients, altering the influence of the disease on the patient's quality of life (KULISEVSKY *et al*., 2022). These patients have decades more exposure to the disease

than late-onset patients, leading to a higher incidence of effects due to the prolonged use of medication, a greater risk of developing non-motor symptoms, especially psychiatric symptoms, such as depression, great social stigma and often worsening quality of life (AGUILERA; VASCONCELOS, 2020).

This study is justified by the need to deepen knowledge about the clinical differences between early- and late-onset Parkinson's disease, since both forms of the disease have characteristics that can have a different impact on quality of life and the performance of patients' motor and non-motor symptoms, so the research comparing the progression in both groups can reveal insights into how PD evolves and what factors might predict faster or slower progression, which could help in predicting patient outcomes and optimizing treatment strategies (AGUILERA; VASCONCELOS, 2020). The current literature is still limited when it comes to directly comparing these two subgroups, especially in Brazil, which highlights the importance of additional investigations.

This paper aims to investigate possible differences in the impact of early and late onset Parkinson's disease on patients' quality of life and motor skills.

2. METHODS

This was an observational, cross-sectional study with data collected using a validated, self-administered, anonymous and voluntary questionnaire. Patients with a diagnosis of Parkinson's disease between the ages of 30 and 100 treated in a city in Brazil between December 2023 and May 2024 were invited to take part in the study, after approval by the ethics committee (CAAE 748532223.6.0000.0093).

The patients were invited to answer the questionnaire in person at the Paraná Parkinson's Association, based on the PDQ-8 questionnaire validated by the Oxford Academy and widely used in various populations (SCHRAG *et al.*, 2007). The first section of the questionnaire consists of accepting the Informed Consent Form (ICF), in accordance with Resolution 466/12, which deals with the rules of research with human beings. Only after accepting the ICF, which guarantees that participation will be completely anonymous and voluntary, was the patient able to go ahead and start answering the questions of the questionnaire. Patients who were unable to complete the questionnaire themselves could have their companion do so on their behalf, provided they accepted the ICF.

The impact on quality of life in PD patients was investigated using the PDQ-8 questionnaire., which is a highly useful tool for analyzing the impact of Parkinson's disease due to several key characteristics that make it effective, such as capturing both both physical and psychological functioning. The eight dimensions of the PDQ-8 cover: Mobility, Activities of Daily Living (ADL), Emotional Well-being, Stigma, Social Support, Cognition, Communication and Bodily Discomfort. In each dimension, the patient reports how often they have experienced these problems over the last month, on a scale from 0 (Never) to 4 (Always). The score is then added up between the dimensions, divided by the maximum possible score, and finally expressed as a percentage from 0 to 100, with the greater the impact the higher the PDQ-8 value.

In order to assess the patients' motor skills, questions were asked based on the most common motor symptoms present in the diagnosis of PD, namely the presence of tremor, slow gait (bradykinesia), freezing of gait, postural imbalance, stiff joints (rigidity), asymmetrical onset, insomnia, falls, involuntary movements, pain on movement, anosmia and fecal or urinary incontinence, so the more symptoms present at diagnosis, the more affected the patient's motor skills.

In addition, the differentiation between patients with early and late PD was based on the age of onset of symptoms. Patients diagnosed with early PD were considered to have had their first symptoms before the age of 50 (KUKKLE *et al*., 2022).

Statistical analyses were carried out using the SPSS 17.0 program. The Kolmogorov-Smirnov and Shapiro-Wilk tests were applied to assess the normality of the data. Continuous variables were expressed as mean and standard deviation and compared using Student's t-test. Categorical variables were expressed as percentages and compared using Fisher's exact test and Chi-Square, according to appropriate. P-values lower than 0.05 were considered statistically significant.

3. RESULTS

This research involved interviewing 105 patients, of whom 59 (56.2%) were male and 46 (43.8%) females, during the interview period. The majority of patients belonged to the group with late onset Parkinson's disease (n=83, 79%), followed by the group with early onset Parkinson's disease (n=22, 21%).

As for schooling, most of the patients had completed high school or higher education (25.7% in each group), shown in Table 1. Patients with early onset of the

disease were the ones who most often reported having family members with Parkinson's disease (36.4%, n=8), in contrast to 19.3% (n=16) of the patients in the late onset group.

The mean diagnostic delay was significantly longer in the early-onset PD group (7.5 ± 2.4 years) than in the late-onset group (2.0 ± 1.0 years; p=0.010). The average age at onset of the first symptoms was 41.5 ± 10.3 years for patients with early onset PD and 63.3 ± 9.2 years for those with late onset, according to Table 1. In addition, there was a higher average number of symptoms in the early onset group (6.3 ± 2.7 symptoms) compared to the late onset group (5.3 ± 2.4 symptoms), with a difference that approached statistical significance (p=0.052) (Table 1).

Table 1. Comparison of early and late DP

	LATE DP (N=22; 21%)		EARLY DP (N=83; 79%)		p-VALUE
Sex, n (%)					
Female	7	(31.8)	39	(47.0)	0.234
Male	15	(68.2)	44	(53.0)	
Schooling. n (%)					
Elementary school complete	3	(13.6)	15	(18.1)	0.503
Elementary school incomplete	2	(9.1)	8	(9.6)	
Secondary school complete	9	(40.9)	18	(21.7)	
Secondary school incomplete	1	(4.5)	4	(4.8)	
Higher education complete	4	(18.2)	23	(27.7)	
Higher education incomplete	0	(.0)	7	(8.4)	
Master's/ PhD	3	(13.6)	8	(9.6)	
Family members with PD (1st-3rd degree), n (%)	8	(36.4)	16	(19.3)	0.150
Age at the time of the interview [years], mean (± SD)	60.8	(8.8)	71.5	(9.7)	**<0.0001**
Age at diagnosis [years], mean (± SD)	49.0	(8.0)	65.3	(8.7)	**<0.0001**
Time to diagnose [years], mean (± SD)	7.5	(2.4)	2.0	(1.0)	**0.010**
Age of first symptoms [years], mean (±SD)	41.5	(10.3)	63.3	(9.2)	**<0.0001**
PDQ-8 [points], mean (± SD)	41.1	(11.3)	33.1	(8.0)	**0.039**
Number of symptoms in diagnosis, n (%)	6.3	(2.4)	5.3	(2.4)	**0,052**

SD: Stander deviation

Regarding the assessment of quality of life in PD patients, the score on the PDQ-8 questionnaire showed a significant difference between the early and late groups, with patients in the early group showing a significantly higher score (41.1 ± 11.3 points) compared to the late group (33.1 ± 8.0 points; p=0.039) (Table 1).

Investigating the PDQ-8 questions individually, we observed that interpersonal difficult were declared by 27% of the patients in the late group, in contrast to 60% in the

early group (p=0.029). The other items investigated in the questionnaire were similar between the groups.

Regarding the difficulty in dressing oneself, there was a prevalence in the late onset group, where 17 patients answered always (20.5%), 11 answered frequently (13.3%) and 20 sometimes (24.2%). The early onset group had only 4 patients who always had difficulty (18.2%), two who often did (9.1%) and 8 who had difficulty only sometimes (36.4%) (Table 2).

Table 2. Comparison between answers to the Pdq-8 questionnaire

	EARLY DP		LATE DP		
	N	%	N	%	P-VALUE
Have you had problems walking in public places?					
0	9	(40.9)	23	(27.7)	0.264
1	0	(.0)	7	(8.4)	
2	3	(13.6)	23	(27.7)	
3	6	(27.3)	14	(16.9)	
4	4	(18.2)	16	(19.3)	
Did you have trouble dressing yourself?					
0	4	(18.2)	26	(31.3)	0.545
1	4	(18.2)	9	(10.8)	
2	8	(36.4)	20	(24.1)	
3	2	(9.1)	11	(13.3)	
4	4	(18.2)	17	(20.5)	
Did you feel depressed?					
0	3	(13.6)	25	(30.1)	0.168
1	4	(18.2)	15	(18.1)	
2	6	(27.3)	26	(31.3)	
3	4	(18.2)	4	(4.8)	
4	5	(22.7)	13	(15.7)	
Have you had relationship problems with people close to you?					
0	9	(40.9)	60	(72.3)	**0.029**
1	5	(22.7)	7	(8.4)	
2	3	(13.6)	11	(13.3)	
3	2	(9.1)	2	(2.4)	
4	3	(13.6)	3	(3,6)	
Have you had trouble concentrating?					

0	9	(40.9)	38	(45.8)	0.764
1	2	(9.1)	14	(16.9)	
2	5	(22.7)	15	(18.1)	
3	3	(13.6)	10	(12.0)	
4	3	(13.6)	6	(7.2)	
Did you feel like you couldn't communicate effectively?					
0	9	(40.9)	42	(50.6)	0.376
1	3	(13.6)	5	(6.0)	
2	8	(36.4)	19	(22.9)	
3	1	(4.5)	11	(13.3)	
4	1	(4.5)	6	(7.2)	
Have you had painful muscle cramps or spasms?					
0	5	(22.7)	24	(28.9)	0.543
1	1	(4.5)	10	(12.0)	
2	7	(31.8)	23	(27.7)	
3	7	(31.8)	15	(18.1)	
4	2	(9.1)	11	(13.3)	
Have you felt embarrassed in public because you have Parkinson's Disease?					
0	11	(50.0)	59	(71.1)	0.221
1	2	(9.1)	8	(9.6)	
2	4	(18.2)	10	(12.0)	
3	3	(13.6)	4	(4.8)	
4	2	(9.1)	2	(2.4)	

Legend: 0: Never, 1: Rarely, 2: Sometimes, 3: Often, 4: Always

Regarding the initial symptoms of the disease, tremor was the most frequent in both groups, present in 77.3% (n=17) of patients with early onset and 72.3% (n=60) with late onset at the time of diagnosis (Table 3). The asymmetric onset of symptoms was also observed in a significant proportion of patients, declared by 63.6% (n=14) of patients in the early onset group and 68.7% (n=57) in the late onset group. The least common symptom was fecal and/or urinary incontinence in both groups (early onset: 27.3%, n=3; late onset: 16.9%, n=6), (Table 3).

Table 3. Comparison of early and late pd motor skills

	EARLY DP N (%)		LATE DP N (%)		p-VALUE
TREMOR	17	(77.3)	60	(72.3)	0.789
SLOW RUNNING	10	(45.5)	36	(43.4)	1.000
GEAR FREEZE	7	(31.8)	24	(28.9)	0.797
POSTURAL IMBALANCE	16	(72.7)	44	(53.0)	0.145
JOINT STIFFNESS	14	(63.6)	42	(50.6)	0.340
ASYMMETRICAL START	14	(63.6)	57	(68.7)	0.798
FALLS	12	(54.5)	37	(44.6)	0.475
INVOLUNTARY MOVEMENTS	11	(50.0)	21	(25.3)	**0.037**
PAIN ON MOVEMENT	13	(59.1)	31	(37.3)	0.098

Involuntary movements were reported more frequently by patients with early onset PD (50%, n=11) compared to the late onset group (25.3%, n=21, p=0.037). Postural imbalance had a higher frequency in patients with early onset PD (72.7%) compared to those with late onset (53%), although this difference did not reach statistical significance (p=0.145). The other symptoms investigated had similar frequencies between the groups (Table 3).

4. DISCUSSION

According to the World Health Organization (WHO), Parkinson's Disease (PD) affects approximately 4 million people worldwide, representing around 1% of the population. This neurodegenerative disease has a significant impact on the quality of life of individuals, making it crucial to understand the factors that influence the daily lives of these patients in order to monitor them properly and develop future treatments and interventions. In the present study, we observed a greater impact on quality of life in patients with early onset PD, who tend to have a greater number of symptoms, a longer time to diagnosis and a longer time to treatment.

Differences in the clinical presentation of PD patients are reported in the literature (CAMERUCCI *et al.*, 2021). Although the precise cause for these variations is not completely known, the age of onset and genetic factors can play an important role in the clinical presentation of the disease (YANG; WU; SONG, 2023). Recognizing the implications related to early- and late-onset disease contributes to a personalized treatment of these patients.

This study obtained a lower average score on the PDQ-8 in the late-onset Parkinson's group (33.1 points) compared to the early-onset group (41.1 points). It suggests a lower quality of life in patients with early-onset PD compared to the late-onset group. These findings align with the notion that early-onset Parkinson's is often associated with greater impairment of activities of daily living. The varied clinical presentation is mainly related to the greater complexity of symptoms and the length of time using levodopa due to its side effects (BOVENZI *et al*., 2023); studies also support the relationship between the drug and the results obtained (MEHANNA *et al*., 2022).

Although early onset Parkinson's tends to have a slower progression, it is associated with a greater risk of motor complications, contributing to an impact on the quality of life of these patients. In addition, this same study explores the correlation between a higher incidence of dyskinesia in patients who have lived with the disease for longer and prolonged use of Levodopa (MEHANNA *et al*., 2022), making it difficult for individuals to perform daily activities such as eating, dressing, walking, or writing.

The present study observed a higher frequency of the dyskinesia, and consequently its impact on quality of life, in patients with early onset Parkinson's with prolonged Levodopa treatment (BOVENZI *et al*., 2023). In this respect, the result of a higher frequency of dyskinesia in early parkinsonism is in line with the current literature, which indicates that involuntary movements can be observed in around 33% of PD patients, 40% in early PD and 25.5% in late PD patients (KUKKLE *et al*., 2022).

With regard to problems in relationships, 27% of the patients in the late-onset Parkinson's group had some degree of impairment in this matter. In contrast, approximately 60% of the patients in the early onset Parkinson's group reported difficulties in their close relationships. This aligns with findings that highlight unique challenges in their relationships, including higher divorce rates and a desire to have children, faced by younger patients. This phenomenon may also be related to younger patients' difficulty in accepting the diagnosis and the drastic changes in their career plans and daily lives, especially when non-motor symptoms manifest and influence their ability to perform their occupation (POST *et al*., 2020).

Although the data on symptoms of depression was not statistically significant between the groups, 86.9% of patients with early onset PD had some degree of depressive symptoms, compared to 69.9% in the late onset group. The literature presents conflicting results on this issue. One study reported that anxious and depressive symptoms are more

commonly found in patients with early onset Parkinson's (CONG *et al*., 2022), while another study found no significant difference between the groups (BAIANO *et al*., 2020). Conflicting results are also found when analyzing depressive symptoms, but in a general consensus early onset PD is often associated with more severe symptoms (BOVENZI *et al*., 2023). The discrepancies between the results may be related to variation in the classification of early and late diseases, sample size and self-reported symptoms or clinical diagnosis. Despite the divergences between the studies analyzed, the importance of assessing mood alteration in Parkinson's patients is undeniable for appropriate cognitive therapies in both groups (POST *et al*., 2020). Dementia a common and debilitating complication that affects many individuals as the disease progresses. While Parkinson's Disease is primarily known for its motor symptoms, such as tremors, bradykinesia, and rigidity, the cognitive decline that accompanies PD can be equally challenging.

The prevalence of symptoms related to daily function, such as sexual dysfunction were present in different frequencies in both groups. Sexual dissatisfaction was more prevalent in EOPD male patients than in the general population, which can lead to episodes of depression. (VELA-DESOJO *et al*., 2020).

As for symptoms, apart from dyskinesia, we observed a greater number of symptoms in precocious patients. This finding is in line with the literature. Recent studies, such as Reijnders *et al*., also suggest that it is common to observe a greater number of symptoms in the diagnosis of early Parkinson's due to the delay in diagnosis, which was also observed in this study. Others also correlate the concomitant expression of Parkinson's with other comorbidities, such as epilepsy (HOANG *et al*., 2023).

Although we observed differences in the manifestation of symptoms in late- onset and early-onset PD, many of them did not reach statistical significance, despite the fact that studies indicate greater severity of symptoms as the disease manifests itself at older ages (KOLICHESKI *et al*., 2022). This may suggest that for the patients in this study, part of the symptoms involving motor and cognitive difficulties may be equally debilitating in both groups, regardless of the age of onset. On the other hand, the sample obtained may not have been sufficient to observe such differences.

In this study, we observed a higher frequency of patients with late-onset Parkinson's disease. This result is in line with previous studies which indicate that Parkinson's is more commonly diagnosed at older ages, with a higher incidence of the

disease in older populations (OU *et al*., 2021). Interestingly, early onset Parkinson's disease accounts for 5 to 7% of cases in the Western hemisphere, however, in the present study, the prevalence found was 21%. The divergence between the data found and the literature may be because the patients were recruited from a center specializing in Parkinson's, in addition to the limited number of Brazilian studies that differentiate the age of onset of the disease.

About gender, the data shows a slight male predominance (56.2%) in both groups. This observation is in line with the study (OU *et al*., 2021), which suggests that men are approximately 1.5 times more likely to develop Parkinson's compared to women. As for schooling, the diversity observed among the patients indicates that Parkinson's is not restricted to a specific socioeconomic profile, which diverges from the literature consulted, which suggests an influence of educational level on diagnosis and the search for treatment, especially in European populations (FRIGERIO *et al*., 2021). It is important to note that studies on educational level mainly cover European populations, and that more studies are needed on this data in the Brazilian population.

Although mostly in line with other studies on the subject, this study has limitations, including those inherent to cross-sectional studies, possible memory bias and selection of patients in places specialized in the disease, as well as the absence of companions or data that could corroborate the information reported.

5. CONCLUSION

In summary, our findings provide evidence to support the presence of significant clinical differences between early- and late-onset PD. Patients with early-onset PD had poorer quality of relationships, significant motor impairment and a longer time to diagnosis. Consequently, there was a greater impact on the quality of life of patients with early onset compared to late onset, evidenced by higher scores on the PDQ-8 questionnaire.

Our study highlights significant clinical and quality-of-life differences between patients with early-onset PD and those with late-onset PD. Patients with early-onset PD tend to experience a greater burden in various aspects of life, including a higher number of symptoms, a longer time to diagnosis, and a greater delay in receiving treatment. These factors contribute to a significantly poorer quality of life for early-onset PD patients, as evidenced by the higher scores on the PDQ-8 questionnaire.

Our findings underline the need for tailored treatment strategies for patients with early-onset PD, considering the distinctive challenges they face. The impact of the disease on daily functioning, emotional health, and quality of life highlights the importance of early intervention and continuous support. While further studies are needed to refine our understanding of these differences, this research contributes valuable insights into the importance of considering the age of onset when managing Parkinson's disease, ultimately helping to improve patient care and inform future therapeutic interventions.

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CONTRIBUIÇÃO DE AUTORIA

Júlia Morais Zandavali: Contribuiu na concepção do projeto, análise e interpretação dos dados, redação do trabalho, revisão crítica do conteúdo e aprovação da versão final a ser publicada.

Eduarda Menin da Silva: Contribuiu na concepção do projeto, análise e interpretação dos dados, redação do trabalho, revisão crítica do conteúdo e aprovação da versão final a ser publicada.

Valentina Lima Cartaxo da Silva: Contribuiu na concepção do projeto, análise e interpretação dos dados, redação do trabalho, revisão crítica do conteúdo e aprovação da versão final a ser publicada.

Eduardo Lago da Costa Loureiro: Contribuiu para análise e interpretação dos dados, redação do trabalho e aprovação da versão final a ser publicada.

Bruna Fernanda Dysarz Moretti: Contribuiu na concepção do projeto, análise e interpretação dos dados, redação do trabalho, revisão crítica do conteúdo e aprovação da versão final a ser publicada.

Octávio Augusto Ormeneze: Contribuiu para análise e interpretação dos dados, redação do trabalho e aprovação da versão final a ser publicada.

Renata Ramina Pessoa: Contribuiu para análise e interpretação dos dados, redação do trabalho e aprovação da versão final a ser publicada.

Fabiana Antunes de Andrade: Contribuiu para análise e interpretação dos dados, redação do trabalho e aprovação da versão final a ser publicada.