

# Pain, a Non-Motor Sign Associated with Parkinson's Disease: The Experience of the Institute of Neurology of Simbaya, Conakry

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## Abstract

**Introduction:** Pain has been defined for more than 20 years by the International Association for the Study of Pain (IASP) as an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage. It has been recognized as a feature of Parkinson's disease (PD) since the first descriptions of the disease. **Material and Methods:** This was a prospective descriptive study lasting six (06) months from November 1, 2023 to April 30, 2024. We included all patients diagnosed with PD and who had pain. Sociodemographic, clinical, paraclinical and therapeutic data were evaluated for each patient. **Results:** We identified a sample of 62 Parkinson's patients, of whom 52 patients or 85.2% had associated pain. We noted a male predominance (38M/14F) and a sex ratio of 2.71. Musculoskeletal pain was common in 80% of our respondents. WHO level I, antidepressants and background treatment for KD were the most prescribed molecules. **Conclusion:** Our study shows a frequency of pain in PD. However, musculoskeletal pain is the most frequently encountered type of pain in PD patients. WHO step I analgesics, antidepressants and background treatment of KD were the main prescriptions in our study.

## Keywords

Pain, Parkinson's Disease, Conakry

## 1. Introduction

Pain has been defined for over 20 years by the International Association for the Study of Pain (IASP) as an unpleasant sensory and emotional experience associated

with actual or potential tissue damage, or described in terms of such damage [1]. It has been recognized as a hallmark of Parkinson's disease (PD) since the earliest descriptions of the disease [2]. Pain is estimated to occur in approximately 40% of PD patients and in a minority of patients, the pain is so severe and poorly treatable that it overshadows the motor symptoms (resting tremor, akinesia, rigidity) of the disease [3].

Recognition and accurate characterization of pain are crucial for the optimal treatment of patients with PD. This lack of treatment is due to the lack of knowledge of the underlying mechanisms [4].

Worldwide, 30% to 50% of Parkinson's patients present with sensory disturbances or pain that may precede or accompany motor manifestations [5].

In the United States, Goetz CG *et al.*, in 1986 reported a frequency of 46% of cases of pain in PD [6].

In China, Lin *et al.*, in 2016 reported a 56% frequency of pain cases in PD [7].

In France, Brefel-Courbon *et al.*, in 2017 reported a frequency of 80% of consumption of analgesics by Parkinson's patients [3].

In Morocco, Tibar *et al.* in 2017 reported a frequency of 53% of pain in a cohort of 100 Parkinson's patients [8].

In Mali, Maiga B *et al.* in 2016 reported a frequency of 76.7% of cases of pain in their study on non-motor signs in patients with PD at the Point G University Hospital [9].

Pain is a very common symptom in PD with an impact on the quality of life of patients, but it remains underdiagnosed and generally treated in a non-systematic manner. They may be related to PD or secondary diseases, such as osteoarthritis of the spine or joints. However, even fundamentally, non-PD pain is often amplified by motor or non-motor PD symptoms, such as akinesia or depression. Beyond optimization of antiparkinsonian drugs, additional pain management strategies are usually necessary to adequately treat pain in PD [10].

The etiology and character of pain are often complex and multiple, data regarding treatment recommendations are limited [11].

Treatment strategies for PD pain require a thorough knowledge of the mechanisms responsible for pain experiences in individual patients. Changes in central pathways involved in sensory processing reduce pain thresholds in PD. Studies have confirmed the existence of pathways other than those secondary to rigidity, tremor, or any other motor manifestation of the disease.

The effects on pain relief in PD by analgesics and NSAIDs are not absent, but the limited effects must be taken into account by understanding the partially different pain mechanisms due to the neurodegenerative disorder.

Several indications suggest that physical therapy may not only serve the treatment of pain. Regarding the relief of chronic pain related to PD, further controlled studies are needed [12].

The lack of previous studies in our setting and the high frequency of pain during MK in a resource-limited area motivated the present study.

## 2. Materials and Methods

It was a prospective description-type study lasting six (06) months from November 1, 2023 to April 30, 2024 at the Simbaya Institute of Neurology, Conakry. We have included in our study, all the patients diagnosed with MP with pain and we excluded from our study the painful parkinsonians who had a brain damage to the scanner.

Our study variables have been classified as socio-demographic, clinical, para-clinical and therapeutic data have been evaluated for each patient.

The data of patients responding to our inclusion criteria were collected on an established survey sheet and the count was manually carried out.

We carried out an exhaustive recruitment of all the patients and we submitted them to our selection criteria.

The informed consent of each patient was requested, the merits of the work were explained beforehand, we reassured them of respect for anonymity in the return of the data. Medical confidence has been preserved throughout our study.

## 3. Results

During our study, we identified a total of 62 Parkinsonian patients, of whom 52 patients or 85.2% had associated pain. The mean age of our patients was 63.7 (11.1) with extremes from 30 to 85 years. We noted a male predominance (38M/14F) and a sex ratio of 2.71. **Table 1** shows the distribution of patients according to socio-demographic characteristics.

**Table 1.** Distribution of patients according to sociodemographic data.

Sociodemographic data	Staff	Proportion %
Age		
30 - 39	2	3.8
40 - 49	1	1.9
50 - 59	15	28.8
60 - 69	15	28.8
70 - 79	16	30.8
80 - 89	3	5.8
Average age = 63.7 ± 11.1 years Extremes: 30 and 85 years		
Sex		
Male	38	73.1
Female	14	26.9
Sex ratio = 2.71		
Occupation		
Trader	9	17.3

**Continued**

Student	1	1.9
Official	11	21.2
Housewife	9	17.3
Worker	4	7.7
Retirement	18	34.6
<b>Marital Status</b>		
Bachelor	3	5.8
Married	41	78.8
Widower	8	15.4

The evolution was greater than 03 years in 50% of our patients with a mean VAS of  $6.2 \pm 1.5$ . **Table 2** shows the distribution of patients according to the duration of PD.

**Table 2.** Distribution of patients according to the duration of development of PD.

<b>Evolution</b>	Staff (N = 52)	Percentage (%)
<01 year	11	21.1
01 - 03 years	24	46.1
04 - 06 years old	13	25
>06 years old	04	7.7
<b>Total</b>	52	100

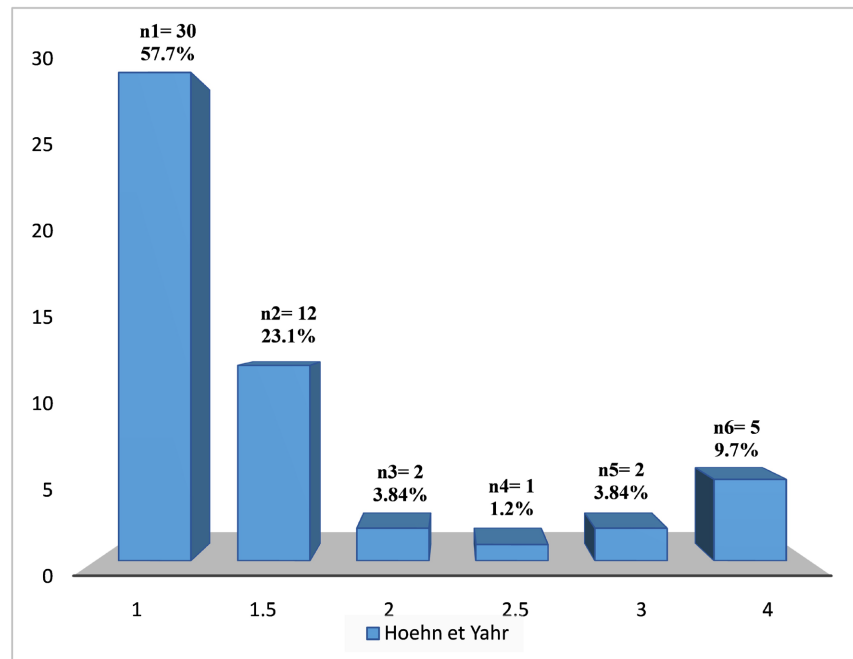
HBP was the most common personal medical history (53.8%). **Table 3** shows the distribution of patients according to medical history.

**Table 3.** Distribution of patients according to medical history.

<b>Personal background</b>	Staff	Percentage (%)
HTA	28	53.8
UGD	14	26.9
Cataract	03	5.7
Cesarean section	02	3.8
<b>Family history of MP</b>		
Yes	04	7.7
No	48	92.3

Musculoskeletal pain was common in 80% of our respondents with a mean Hoehn and Yahr stage of 1.44. **Figure 1** shows the distribution of patients according

to Hoehn and Yahr stages.

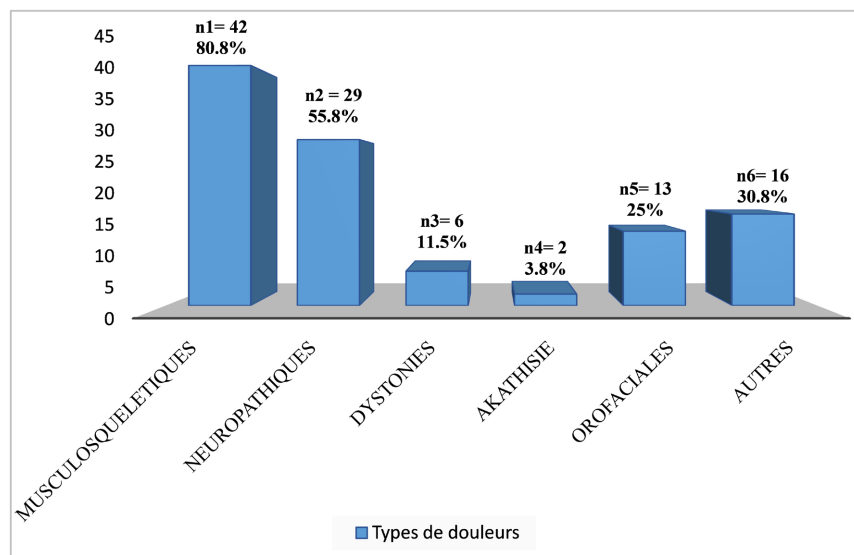


Hoehn and Yahr mean = 1.44.

**Figure 1.** Distribution of patients according to Hoehn and Yahr stages.

Musculoskeletal pain was the most common type of pain in our patients (80.8%).

**Figure 2** distributes patients according to types of pain.



Others: abdominal pain.

**Figure 2.** Distribution of patients according to types of pain.

Triggering factors were reported in 15.4% with stress predominating in 62.5%, **Table 4** shows the distribution of patients according to triggering factors.

**Table 4.** Distribution of patients according to the type of factor triggering the pain.

Triggering factor	Staff (N = 08)	Percentage (%)
Stress	05	62.5%
Cold	03	37.5%
Total	08	100%

Among those not surveyed, 33% reported calming factors for their pain, with massage predominating (52.9%) (Table 5).

**Table 5.** Distribution of patients according to the types of pain-relieving factors.

Relieving factor	Staff (N = 17)	Percentage (%)
Physical activity	08	47.06%
Massage	09	52.94%
Total	17	100%

Pain was severe in 59.6% of our patients with a mean VAS of  $6.2 \pm 1.1$ . Table 6 shows the distribution of patients according to pain intensity.

**Table 6.** Distribution of patients according to pain intensity (VAS).

Pain intensity (VAS)	Staff	Percentage (%)
Light (1 - 3)	00	00
Moderate (4 - 5)	15	28.9
Intense (6 - 7)	31	59.6
Very intense (8-10)	06	11.5
Total	52	100

Average EVA:  $6.2 \pm 1.1$ .

Pain was persistent in 63.5% of our patients. WHO step I, antidepressants and background treatment of KD were the most prescribed molecules. Table 7 distributes patients according to the correlation between the type of medication used for pain and the effectiveness of the treatment.

**Table 7.** Distribution of patients according to the correlation between the type of medication used for pain and the effectiveness of the treatment.

Drugs	Staff	Treatment effectiveness		p-value
		Yes	No	
<b>Painkillers according to WHO</b>				
Level I	40	10	30	<b>0.409</b>
Level II	12	04	08	
<b>Adjuvants</b>				
Antiparkinsonian drugs	49	14	35	<b>0.381</b>
Antidepressants	37	11	26	<b>0.363</b>
Antiepileptics	10	02	08	<b>0.455</b>

## 4. Discussion

We identified 52 painful Parkinsonian patients out of 61 PD patients, *i.e.* a frequency of 85.2%. Our results are comparable to those of Silverdale *et al.* in 2018 [10] who reported a frequency of 85% of pain in PD and higher than those of Fu *et al.* in 2018 and Fekih *et al.* in 2021 who reported frequencies of 52.1% and 42.6% of pain in PD, respectively [11] [12]. This high frequency in our study could be explained on the one hand by the duration of our study as well as the size of our sample and on the other hand by the diversity of methodologies.

The most represented age group was 70 to 79 years, or 30.8%, with a mean age of  $63.7 \pm 11.1$  years and extremes of 30 and 85 years. Our results are comparable to those of Etcheparé *et al.* in 2006, who reported a mean age of  $67.3 \pm 9.2$  years [13]. The high frequency of pain in this age group could be explained by the fact that PD affects older subjects much more. With advanced age, certain processes essential for the function of neurons in the substantia nigra regress, but also the degeneration of the musculoskeletal structure could exacerbate pain in subjects in this age group.

In our series, the male sex was dominant, *i.e.* 73.1% with a sex ratio of 2.71. Our results are comparable to those of Castern Buhman *et al.* in 2017 who reported in their study on the cross-sectional survey on the prevalence, specificities and therapy of pain in MK in Berlin a male predominance of 61.8% [14]. This male predominance could be explained by the fact that MP affects more men than women in whom certain hormones such as estrogen play a protective role [15] [16].

Patients who had a duration of PD symptoms of 1 to 3 years or 46.1% were more represented in our study. Our results are lower than those of Yoritaka *et al.* who reported in 2013 a duration of PD symptoms of 6 to 12 years [17]. This difference could be explained by the fact that in our regions, patients suffering from neurodegenerative pathologies including PD are not only underdiagnosed but also unknown to the general public.

The majority of our patients were at stage 1 of the disease according to the Hoehn and Yahr classification, *i.e.* 57.7% with a mean Hoehn and Yahr stage of 1.44 and 50% of our patients were completely autonomous according to the Schwab and England classification. Our results are lower than those of R. Giuffrida *et al.* who reported a mean Hoehn and Yahr stage of 3.1 [18]. This difference could be explained by the fact that in our country the majority of the population lives below the poverty line. Monitoring and management of neurodegenerative diseases are expensive and patients at a more advanced stage of the disease no longer resort to modern medicine and prefer to turn to traditional medicine responsible for their absence from the control.

During our study, musculoskeletal pain (80.8%) and neuropathic pain (55.8%) were the most commonly reported types of pain. Our results are comparable to those of Bouthouri *et al.* who reported in 2017 a frequency of 95% of musculoskeletal pain and 18% of neuropathic pain [19]. Similarly, Fekih *et al.* in 2021 reported 60% of cases of musculoskeletal pain and 76% of neuropathic pain [12] as

well as Layouni *et al.* who reported in 2019 a frequency of 46.7% of cases of neuropathic pain [15]. This high frequency of musculoskeletal and neuropathic pain in our patients would be due to the fact that Parkinson's disease affects the elderly more. With advanced age, the joints develop abnormalities of the cartilage and connective tissue and therefore osteoarthritis. Aging affects all types of muscle fibers in the same way and at this age, with the progressive loss of muscle mass and strength, the muscles are no longer able to contract as quickly. But also certain factors found in our patients such as a sedentary lifestyle can explain the presence of these pains in Parkinson's patients.

The majority of our patients, 84.6%, did not report any factor triggering the pain, which could be explained by the fact that the pain is permanent.

Massage and physical activity were the main factors that relieved pain in some of our patients. Our results are similar to those of Mooventhan *et al.* who reported that physical exercise would have some benefits, particularly in improving musculoskeletal pain [20] as well as Myers *et al.* who found that yoga reduced the incidence of low back pain in Parkinson's patients and improved balance [21]. Our results corroborate with data from the literature according to which the pressure applied during massage therapy would promote a reduction in anxiety and pain by increasing the blood supply to the muscles and therefore oxygen and nutrients but also by reducing the inflammatory process [22] [23].

The majority of our patients, 59.6%, had severe pain rated at 6 and 7 on the visual analogue scale (VAS) with a mean VAS score of 6.2. Our results are superior to those of Fu *et al.* who reported in a 2018 study 65.3% of moderate pain intensity with a mean VAS score of 5.1 [11]. This difference could be justified by the overestimation of pain by patients but also by the low literacy rate in our context making the assessment of pain difficult.

Level I analgesics (paracetamol) were the most used by our patients, at 55.8%. Our results are higher than those of Silverdale *et al.* who reported respectively 28% and 12% of prescription of paracetamol and NSAIDs to Parkinsonian patients with pain in their study [10]. This high consumption of level I analgesics by our patients could be explained on the one hand by the low socioeconomic level of our population and on the other hand, the accessibility and low cost of these molecules in our context.

Our main limitations and difficulties were

- The short duration of our study and the size of our sample.
- The lack of complete databases.
- Exclusion of vascular forms of PD.
- The scarcity of previous studies on the African level on this subject.

Thus, future studies on these cases will be better with the use of new assessment tools such as the McGill Pain Questionnaire and by taking into account the psychological aspects of pain.

## 5. Conclusions

Pain is sometimes present even before the diagnosis of PD and its impact on the

quality of life of patients increases with the duration of the evolution of symptoms and the degree of severity of PD. The treatment of pain in PD remains currently poorly evaluated. It is possible to think that pain due to excess nociception will respond to an adaptation of dopaminergic treatment. Neuropathic pain can be improved by medications such as certain antiepileptics or antidepressants. Our study shows a frequency of pain in PD. However, musculoskeletal pain is the most frequently encountered type of pain in Parkinson's patients. WHO level I analgesics, antidepressants and background treatment for KD were the main prescriptions in our study.

Due to the major impact of pain on the well-being and quality of life of PD patients, further scientific efforts are needed to clarify the pathophysiological mechanisms of pain in PD in order to improve pain management in PD patients.

We believe that a broader study focusing on the psychological aspects of pain in PD could improve patient management.

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### Certificate

We hereby certify that we assign the copyright to the publisher, that this work has not been previously published, and is not under consideration for publication elsewhere.

We certify that all authors have read and approved the final version together and that ethical aspects have been respected throughout this study.

### Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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