



Profile of Parkinson's Patients with Major Cognitive Deficits Received for Consultation at the Ibrahima Pierre Ndiaye Neuroscience Clinic at the CHNU de Fann in 2022

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Abstract

Introduction: Major cognitive deficits are common in Parkinson's disease, especially in the advanced stages. The objective of this study was to determine the profile of Parkinson's patients with major cognitive deficits seen at the Neurosciences Clinic. **Patients and Methods:** This is a 3-month cross-sectional study (March-June 2022). Parkinson's patients meeting the MDS (Movement Disorder Society) criteria were included in the study. They underwent a neuropsychological assessment (Senegal Test score $\leq 28/39$) and ADL assessment (Keur Madiabel Test score $\leq 5/6$), considered to have a major cognitive deficit according to DSM5. **Results:** We identified 257 patients, 56 of whom presented with major cognitive impairment, representing a frequency of 21.7% and an adjusted frequency of 23.3%. They were predominantly male (46 cases, or 82%). The mean age was 74.6 ± 15 years. The age group of 60 - 80 years was the most affected. Shopkeepers (46%) were the most represented. Hypertension was found in (46%) of cases. The mode of onset was progressive (93%). Executive/visuospatial functions (66.1%) and memory (37.5%) were the most impaired cognitive domains. All patients were on L-Dopa to treat motor symptoms. **Conclusion:** The assessment of Parkinson's patients with the Senegal Test and the Keur Madiabel Test is of value in the management of major cognitive deficits.

Subject Areas

Neurology

Keywords

Parkinson's Disease, Major Cognitive Deficits, Senegal Test, Keur Madiabel Test, Senegal

1. Introduction

Parkinson's disease (PD) is a progressive neurodegenerative disorder characterized by a loss of dopaminergic neurons in the pars compacta of the Substantia Nigra (SNPC) [1].

Major cognitive deficits (MCD) are frequently encountered in PD [2]. MCD is defined by the presence of a severe cognitive deficit that may justify a diagnosis of dementia with an impact on activities in daily life [3].

In Guinea, few studies have been carried out on this subject to our knowledge. Soumaoro. D, in his doctoral thesis in 2015 on "cognitive disorders during Parkinson's disease" revealed a prevalence of 62.16% of cognitive disorders in general during Parkinson's disease [4]. **In CHAD and Senegal, no studies have been carried out to date.**

The general objective of this study is to describe the profile of Parkinson's patients with major cognitive deficits received for consultation at the IBRAHIMA PIERRE NDIAYE Neuroscience Clinic at CHNU DE FANN in 2022.

2. Patients and Methods

2.1. Patients

These were Parkinson's patients seen for consultation at the Ibrahima Pierre Ndiaye Neuroscience Clinic at the CHNU DE FANN in 2022.

2.2. methods

2.2.1. Type and Period of Study

We conducted a descriptive cross-sectional study lasting 3 months from March 13 to June 13, 2022.

2.2.2. Inclusion Criteria

All Parkinson's patients seen in consultation who presented a major cognitive deficit were included in the study.

2.2.3. Exclusion Criteria

All patients received for MP who presented with severe depressive syndrome, aphasia or who did not agree to participate in our survey were excluded from this study.

- **The Senegal Test**

Senegal Test was developed by **Kamadore Toure in 2008**. It is a screening instrument for Dementia newly called Major Cognitive Impairment according to DSM5. It includes items related to orientation; Learning; attention/calculation; Immediate Recall; short story; Delayed Recall; executive/visuospatial functions;

language with a score of 0-39 points. Its validation took place in two phases with people aged 55 and over attending the medical-social and university center of IPRES (Senegalese pension institute).

A score less than or equal to 28/39 indicates a major cognitive deficit [5].

• **The Keur Madiabel Test**

Keur Madiabel Test was designed by **Kamadore Toure** for the assessment of functional autonomy in cases of cognitive deficit. It assesses the following activities:

- ✓ Travel to places of worship;
- ✓ Participation in family ceremonies;
- ✓ Washing alone;
- ✓ Sphincter control;
- ✓ Food autonomy;
- ✓ Praying without making mistakes.

The number of items is 6; with a score (ranging from 0 to 6). When this score is $\leq 5/6$, patients present an impairment of functional autonomy in the context of the activities assessed.

3. Results

3.1. Study Population

During our study period, 257 patients were included in our study. Among them, 56 presented a major cognitive deficit, representing a hospital frequency of 21.7% (See **Figure 1**).

257 (100%) Patients having consulted For Parkinson's disease (PD)	56 cases of Parkinson's disease With Major Cognitive Deficits Frequency=21.7%	201 (78%) cases of MP without Major cognitive deficits
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Figure 1. Flow diagram of inclusions.

Sensitivity of the Senegal test = 93.1%	Estimated number of cases = 60, i.e. a frequency of 23.3%
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Figure 2. Estimated frequency diagram.

Taking into account the sensitivity of the Senegal Test which is 93.1%, we estimate the number of cases at 60 (56 multiplied by 100 divided by 93), which gives an estimated frequency of 23.3% (See **Figure 2**).

3.2. Socio-Demographic Characteristics of Patients

3.2.1. Ages of Patients

The average age of our patients was 74.6 (± 15) years with extremes of 39 and 89 years. The most represented age group was that of 60 to 80 years with 32 cases, *i.e.* a frequency of 57.2% (See **Table 1**).

3.2.2. Sex

During our study, we observed a male predominance with 46 cases or 82% (See

Figure 3).

Table 1. Distribution of patients according to age groups.

Age	Number of cases	Percentage (%)
<40	2	3.6
40 - 60	9	16
60 - 80	32	57.2
≥80	13	23.2
Total	56	100

Average age: 74.6 ± 15 years. Range: 39 and 89 years.

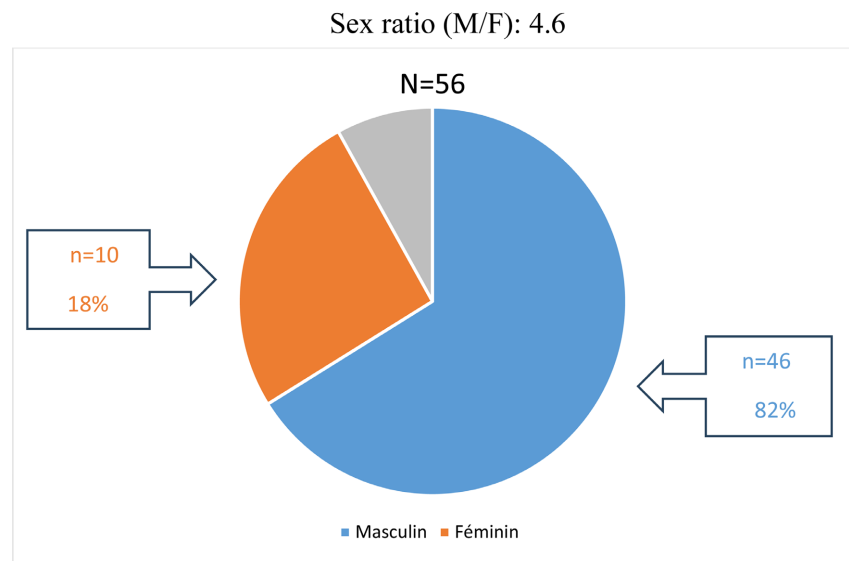


Figure 3. Distribution of patients by sex.

3.3. Clinical Data

3.3.1. Affected Cognitive Areas

In the Neuropsychological assessment with the Senegal Test, executive/visuospatial functions and memory were the most affected cognitive domains with frequencies (66.1% - 37.5%) (See **Table 2**).

Table 2. Distribution of patients according to the characteristics of the Senegal assessment scale.

Affected cognitive domains	Number	Percentage (%)
Visuospatial/Executive	37	66.1
Memory	21	37.5
Attention	14	25
Language	2	3.6
Orientation	2	3.6

3.3.2. Clinical Manifestations

We found a predominance of resting tremor in 53 patients (94.7) (See **Table 3**).

Table 3. Distribution of patients according to clinical manifestations

Reasons for consultation	Effective	Percentage (%)
Resting tremors	53	94.7
Akinesia/Bradykinesia	41	73.2
Rigidity	41	73.2

3.3.3. Treatments Received

All patients received treatment with L-Dopa and Antiemetics/Neuroleptics with a frequency of 100% (See **Table 4**).

Table 4. Distribution of patients according to treatments received.

Treatments	Number	Percentage (%)
L-dopa	56	100
Antiemetics/Neuroleptics	56	100
Antihypertensives	26	46
Anxiolytics	9	16

4. Discussions

During our study, we collected 257 patients. Among them, 56 had presented a major cognitive deficit according to the DSM 5 criteria; a frequency of 21.7% with an adjusted frequency of 23.3%.

The mean age of our patients was 74.6 (± 15 years) with extremes of 39 and 89 years. The most represented age group was 60 to 80 years with 32 cases, a frequency of 57%. Our result corroborates with those reported by Goldman *et al.* [6] in 2013 in the United States [7] who found a mean age of their patients of 73.2 years with extremes of 67.4 and 79 years [8].

In the literature, advanced age constitutes the main risk factor in the occurrence of major cognitive deficits in Parkinson's disease [9].

We have a male predominance with 46 cases or 82% and a sex ratio (M/F) of 4.6. Chon *et al.* in 2022 [7] in the United States also reported a preferential predisposition for men (63%) with a sex ratio of 6 [6].

Several studies report this male predominance in the occurrence of major cognitive deficits in Parkinson's patients and that hormonal factors in women would be protective [5] [6] [9].

With the Senegal Test, executive/visuospatial functions were the most affected (66.1% or 37 cases) followed by memory (37.5% or 21 cases). This could be explained by the fact that L Dopa is strongly involved in executive-visuospatial functions and memory in humans [6].

Lawrence *et al.* [10] in 2022 in Spain reported 50% impairment of executive/

visuospatial functions in Parkinson's patients.

According to previous studies, the Neuropsychological Assessment Test is the most sensitive tool in detecting major cognitive deficit [5].

We observed in 53 of the patients, or 94.7% of the cases, resting tremor, which represented the most common symptom of the Parkinsonian triad, followed by akineto-rigid syndrome with a number of 41 patients, or 73.2%.

These relatively high figures could be explained by the lifting of the inhibition normally exerted on the postsynaptic cholinergic cells of the neostriatum, thus explaining the occurrence of tremor, akinesia and hypertonia [11].

All our patients were on L-Dopa and Antiemetics/Neuroleptics, *i.e.* 100%. Simon-Gazalbo *et al.* [12] in 2020 in Spain reported in their study that 64.6% of Parkinson's patients responded to L-Dopa treatment, which is the reference treatment for motor symptoms of Parkinson's disease [13].

5. Conclusions

Major cognitive deficits in Parkinson's disease are common [2].

Neuropsychology assessment with the Senegal Test and those activities of daily living with the Keur Madiabel Test are major contributions to the diagnosis, management and monitoring of patients with major cognitive deficits.

This study found a frequency of 21.7% with an estimated frequency of 23.3% of major cognitive deficits at the Pierre Ibrahima Ndiaye Neuroscience Clinic of the CHNU of FANN. Executive/visuospatial functions were the most affected (66.1%), followed by memory impairment (37.5%) which is the most affected.

All our patients were on L-dopa to treat the motor symptoms of Parkinson's disease.

Conducting a further study will help to better elucidate the evolving contours of major cognitive deficits in Parkinson's patients and provide a window for new therapeutic interventions.

Conflicts of Interest

The authors declare no conflicts of interest.

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