Post-stroke depression in the Africans

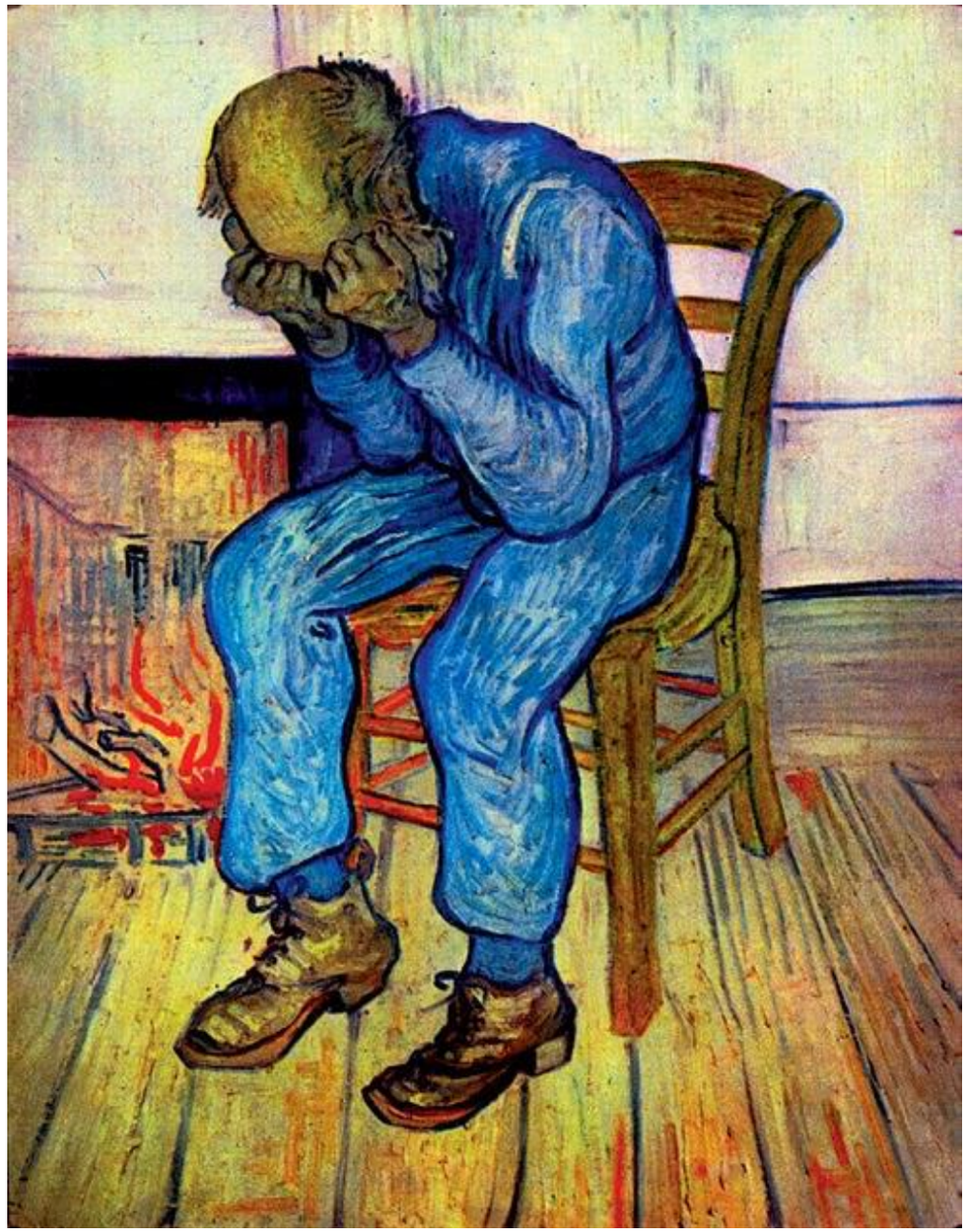
Christian NAPON, MD
Neurology department
Yalgado OUEDRAOGO Teaching Hospital
Ouagadougou
BURKINA FASO

Plan

1. **Generalities about post-stroke depression**

2. **Post-stroke depression in the Africans**

1. Generalities



History

- Recognized by psychiatrists for more than 100 years
- Controlled systematic studies began in the **1970s**.
- **Folstein and al.**, demonstrated that depression was significantly more common in patients with stroke compared with patients with comparable physical impairments due to orthopedic injuries.

Folstein MF, Maiberger R, McHugh PR: Mood disorder as a specific complication of stroke. J Neurol Neurosurg Psychiatry 1977; 40: 1018–1020

Definition

- **PSD : Depression which occurs after stroke and can not be ascribed to any other mental illness**
- Also termed **Vascular Depression**= depression associated with cerebrovascular disease.

DSM-V Depression Diagnosis

5 of the following below for 2 weeks + (1) depressed mood or (2) loss of interest or pleasure.

- **depressed mood** frequently in a day
- markedly **diminished interest or pleasure** in activities
- significant **weight loss** when no dieting or **weight gain**
- **insomnia** or **hypersomnia**
- psychomotor **agitation or retardation**
- **fatigue** or loss of energy
- **feelings of worthlessness** or excessive or inappropriate **guilt**
- **diminished ability to think or concentrate**, or indecisiveness
- **recurrent thoughts of death**, recurrent **suicidal ideation**

Depression : Young vs Elderly

	Younger patients	Elderly patients
Depressed mood	+++	+(+)
Cognitive impairment	+	+++
Retardation	++	++
Somatic symptoms	+	+++
Anxiety	+(+)	+++
Psychotic symptoms	(+)	++
Hypochondria	+	++

Lokk J, Delbari A, *Management of depression in elderly stroke patients.* Neuropsychiatr Dis 2010; 6: 539-549.

PSD subtypes

- **Early PSD :** within 3 months of the stroke
  - ↑Somatic signs of depression
  - Earlier onset of melancholy
  - ↑Social withdrawal
  - ↑Amotivation
- **Late PSD :** anytime after 3 months of the stroke

Increased risk for PSD

- Age
- Female gender
- Single living
- Unable to return to work
- Social activities
- Change in ability to communicate
- Stroke severity
- Prior history of depression
- Genetic factors : 5-HTTLPR and the STin2 VNTR polymorphisms of the serotonin transporter gene (SERT)

Does Lesion location predict PSD?

- **Multiple studies suggest:**
    - Left frontal lobe
    - Basal ganglia
    - Left hemisphere >> Right hemisphere

- **Multiple reviews** do not demonstrate an association between lesion site and development of PSD.

What makes diagnosis difficult?

- Signs of depression overlap with stroke

- Depression complaints are more vague

- Lack of properly trained personnel

- Lack of assessment tools for diagnosis

Assessment of PSD

- Clinical interview and history
- Collateral information from family and caregivers
- Observational standardized screening measure
- Self-reports standardized screening measure when appropriate

Differential Diagnosis

- Hypoactive Delirium
- Adjustment Disorder
- Aboulia (particularly with frontal strokes)
- Dementia
- Pseudobulbar affect

Frequency of PSD

- The frequency of PSD has been studied in many countries of the world.
- The most recent meta-analysis of 61 cohorts including 25,488 patients reported that **31% of patients developed depression within the 5 years following stroke.**

Hackett ML, Pickles K: Part I: frequency of depression after stroke: an updated systematic review and meta-analysis of observational studies. Int J Stroke 2014; 9:1017–1025

Etiological Mechanisms (1)

- **Role of psychological, social, and biological factors**
- **Stroke severity, degree of functional physical and cognitive impairment**
- Alterations in ascending monoamine systems
- Hypothalamic- hypophysial axis abnormalities,
- Disruption of prefrontal-subcortical circuits,
- Alterations in neuroplasticity and in glutamate neurotransmission
- Excess of proinflammatory cytokines

Etiological Mechanisms (2)

However, a pathophysiological hypothesis of PSD that can integrate these changes into a coherent explanatory model has yet to be formulated.

Mortality

- Patients with PSD are 3-4 times more likely to die during a 10 years period after stroke than those without depression.

- Patients with PSD and few social contacts have an even increased mortality rate.

Treatment of PSD (1)

- A meta-analysis of 16 randomized controlled trials (12 using antidepressants and 4 evaluating the efficacy of psychotherapy) that included 1,655 patients found :
  - a significant beneficial effect of antidepressant medication (SSRIs),
  - whereas psychotherapy was not more effective than a control intervention.

Hackett ML, Anderson CS, House A, et al: Interventions for treating depression after stroke. Cochrane Database Syst Rev 2008; (4): CD003437

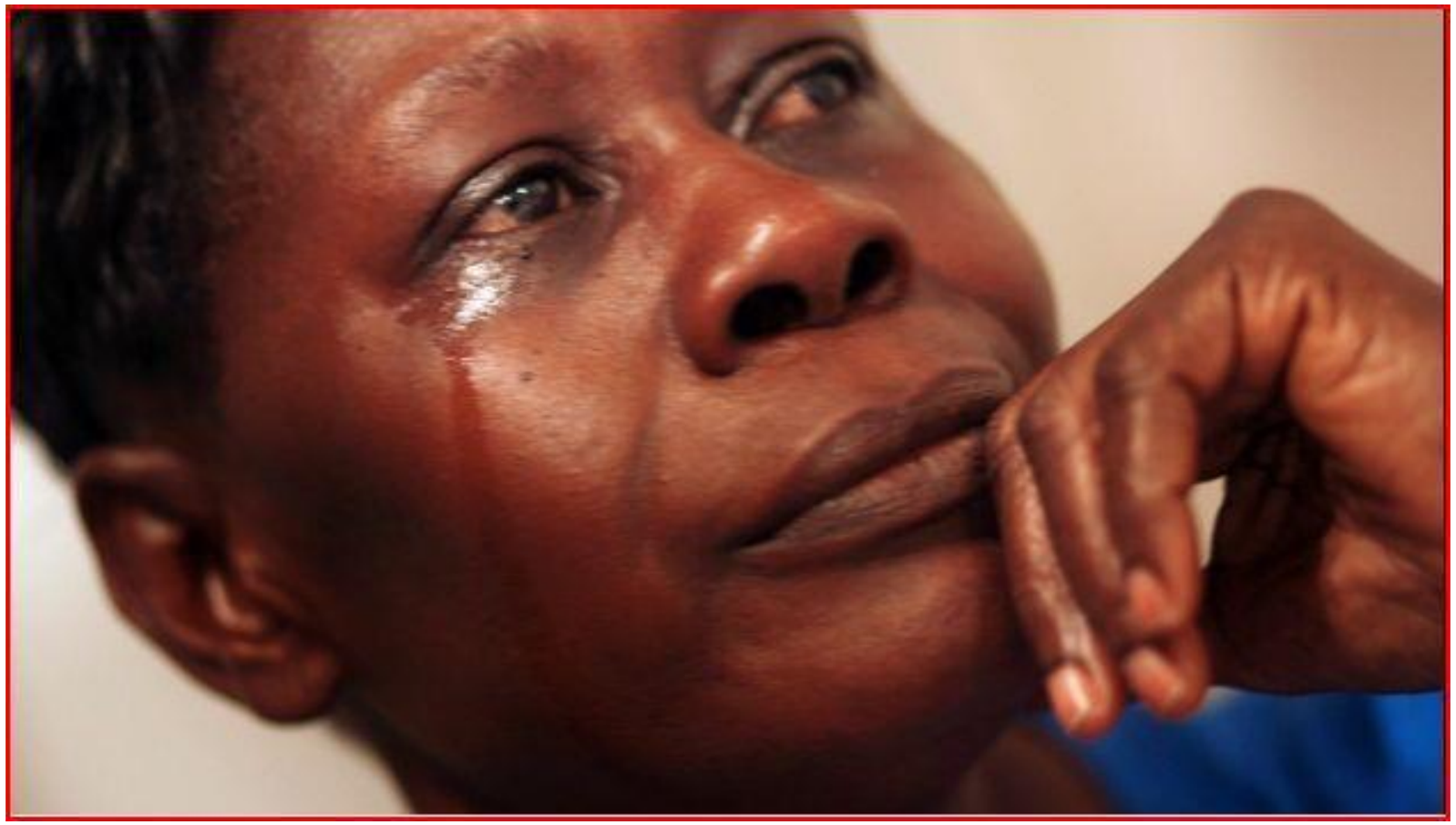
Treatment of PSD (2)

Brief psychosocial therapies, that place emphasis on care management, psycho-education, and family support can be beneficial to treat or prevent PSD in combination with antidepressant treatment.

Mitchell PH, Veith RC, Becker KJ, et al: Brief psychosocial-behavioral intervention with antidepressant reduces poststroke depression significantly more than usual care with antidepressant: living well with stroke: randomized, controlled trial. Stroke 2009; 40:3073–3078

Williams LS, Kroenke K, Bakas T, et al: Care management of poststroke depression: a randomized, controlled trial. Stroke 2007; 38:998–1003

2. PSD in the Africans



Overview

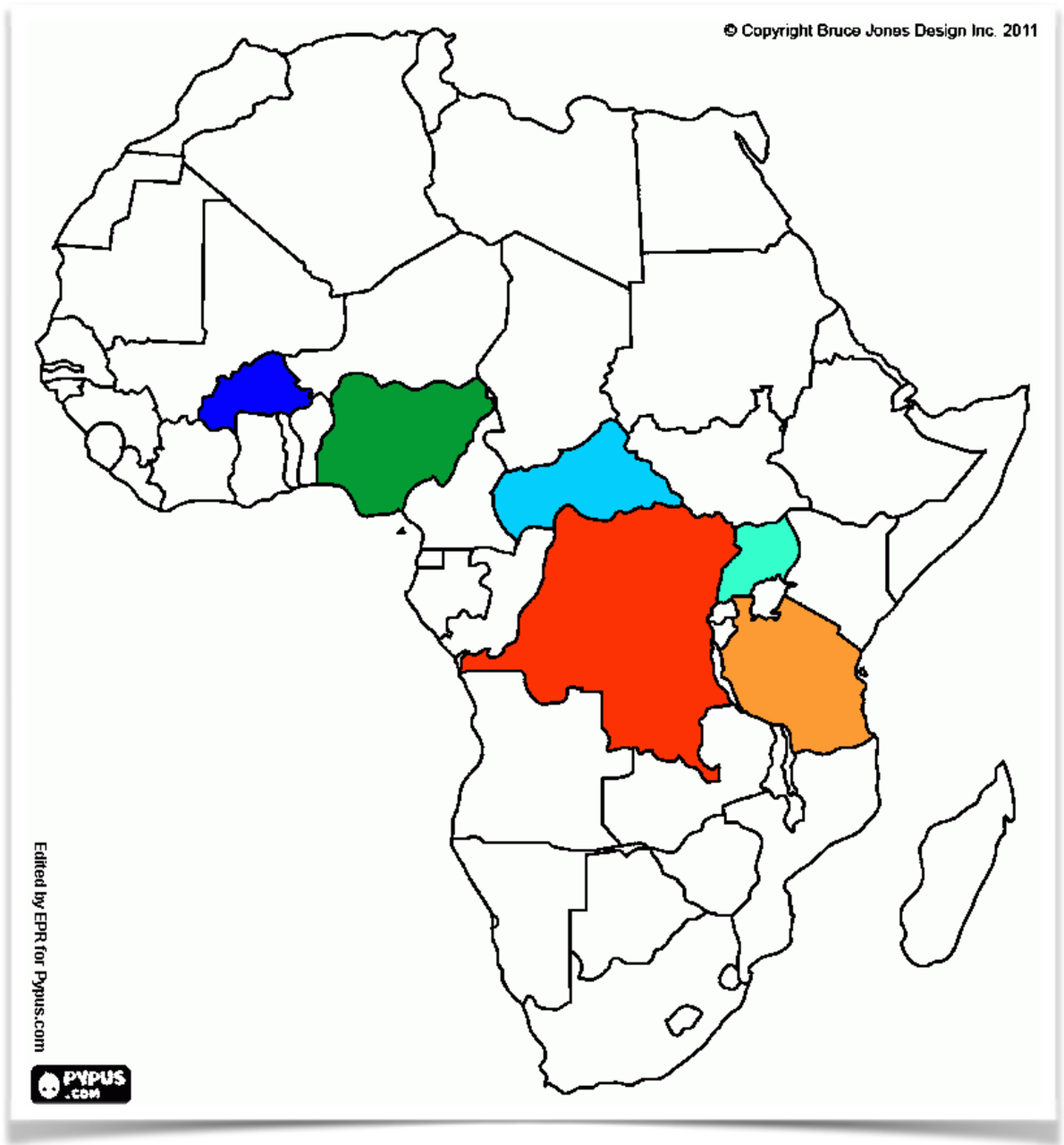
- Few studies were done in Africa (Nigeria, Tanzania, BF, RCA, RDC, Ouganda)

- Methods used are not homogeneous

- Hospital studies with small samples of patients

- The diagnostic criteria are based on different scales

- Variables of the studies are not always the same



Methodological features of African Studies (1)

Countries	Numbers of studies	Years	Methods
Nigeria	3	2009 2013 2014	Cross-sectional study Cross-sectional study Case-Control study
Tanzania	1	2011	Cross-sectional study
Burkina Faso	1	2012	Prospective cohort study
Democratic Republic of Congo	2	2014	Cross-sectional study Prospective cohort study
Central African Republic	1	2014	Case-Control study
Ouganda	1	2015	Cross-sectional study

Methodological features of African Studies (2)

Countries	Diagnostic criteria
Nigeria	Depression Anxiety Stress Scale - 21 (DASS - 21) DSM 4 Schedules for clinical Assessment in Neuropsychiatry (SCAN)
Tanzania	Hospital Anxiety and Depression Questionnaire (HAD)
Burkina Faso	DSM 4 Montgomery and Asberg Depression Rating Scale (MADRS)
Democratic Republic of Congo	Patient Health Questionnaire (PHQ9)
Central African Republic	Montgomery and Asberg Depression Rating Scale (MADRS)
Ouganda	Patient Health Questionnaire (PHQ9)

Demographic data (1)

Countries	Nb Stroke patients	Frequency PSD (%)	Mean age	Sex ratio
Nigeria	130	**41.5**	59	***0,8***
Burkina Faso	165	**38.9**	57	***0,9***
D. R. Congo	56	*21.4*	54	*1,6*
Central African Republic	35	*88.6*	49	*1,4*
Ouganda	73	**31.5**	60	***0.5***

Demographic data (2)

As shown on the tables above, in all countries the frequency of PSD is high with significant variations between countries. This can be explained by:

- the use of various tools by individual studies,
- the presence of other causes of depression and possible differences in how samples were enrolled,
- the complexity of stroke patients for whom ordinary tools for depression may not be appropriate.

Time of occurrence (1)

- Very variable and depends on the methodology used in the various studies

- However, according to the studies the occurrence is relatively early :

  - In our study, the time of occurrence was early (less than or equal to 30 days) in 73% of cases.

  - In Ouganda, PSD was commonly seen among participants who had the assessment done within 3 months after onset of stroke (56.5%), compared to those beyond 3 months

Time of ocurrence (2)

- Those results would find their explanations in :

  - the stress of new hospital life

  - the sudden and unexpected characters of the deficit installation

  - the dismay and great concern that surround the patient and his relatives during the acute phase

Severity of PSD (1)

- According to the **MADRS in our study,**
  - **43/65 (66 %)** PSD were in **mild depression**
  - **19/65 (30 %), in moderate depression**
  - **severe depression** with suicide attempt in 3 patients **(4 %**)

Napon C and al. Post stroke depression in Burkina Faso. Pan Afr Med J, 13, 3.

Severity of PSD (2)

Tableau 3 Distribution des sujets déprimés de l'étude en fonction de l'intensité de la dépression / *Distribution of depressed subjects of the study based on the intensity of depression.*

Caractéristiques	**Cas (n=31)**				**Témoins (n=20)**
Type dépression	Légère N %	Modérée N %	Sévère N %	Légère N %	Modérée N %
Homme	6 (66,7)	8 (53,4)	4 (57,2)	9 (64,3)	4 (66,7)
Femme	3 (33,3)	7 (46,6)	3 (42,8)	5 (35,7)	2 (33,3)
< 50 ans	7 (77,8)	11 (73,3)	5 (71,4)	10 (71,4)	4 (66,7)
> 50 ans	2 (22,2)	4 (26,7)	2 (28,6)	4 (28,6)	2 (33,3)

Mbelesso P and al. Bull. Soc. Pathol. Exot. (2014) 107:350-355

Severity of PSD (3)

In Ouganda, among seventeen non-aphasic subjects with depression,

- **twelve (70.6%) had mild depression**,
- four (23.5%) had minimal symptoms of depression
- one (5.9%) had moderately severe depression.
- None was found to have severe depression

Gyagenda and al.Post-stroke depression among stroke survivors attending two hospitals in Ka

Severity of PSD (4)

- In Africa, all the studies show that the PSD is relatively moderate
  - Are those observations related to assessment methods?
  - Efficient device of psychological support (interpersonal psychotherapy)
  - Remarkable interpersonal solidarity

Risk factors of PSD (1)

Functional and cognitive impairment

Countries	Disability (%)	Cognitive impairment (%)
Nigeria	86	26.2
Burkina Faso	96	24

1. *A. Ojagbemi et al. / Post-stroke major depression in Nigeria*
2. *Napon C and al. Post stroke depression in Burkina Faso. Pan Afr Med J, 13, 3.*

Risk factors of PSD (2)
Functional and cognitive impairment

- The severity of disability **was found to be significantly related to PSD** in 16 out of 18 studies reviewed by Hackett and Pickles and in 24 out of 30 studies reviewed by Johnson et al.

Hackett ML, Pickles K. Int J Stroke 2014; 9:1017–1025

Johnson JL, Minarik PA, Nyström KV, et al:. J Neu- rosci Nurs 2006; 38(suppl):316–327

- The relationship between PSD and cognitive impairment (especially executive dysfunction) has been well established

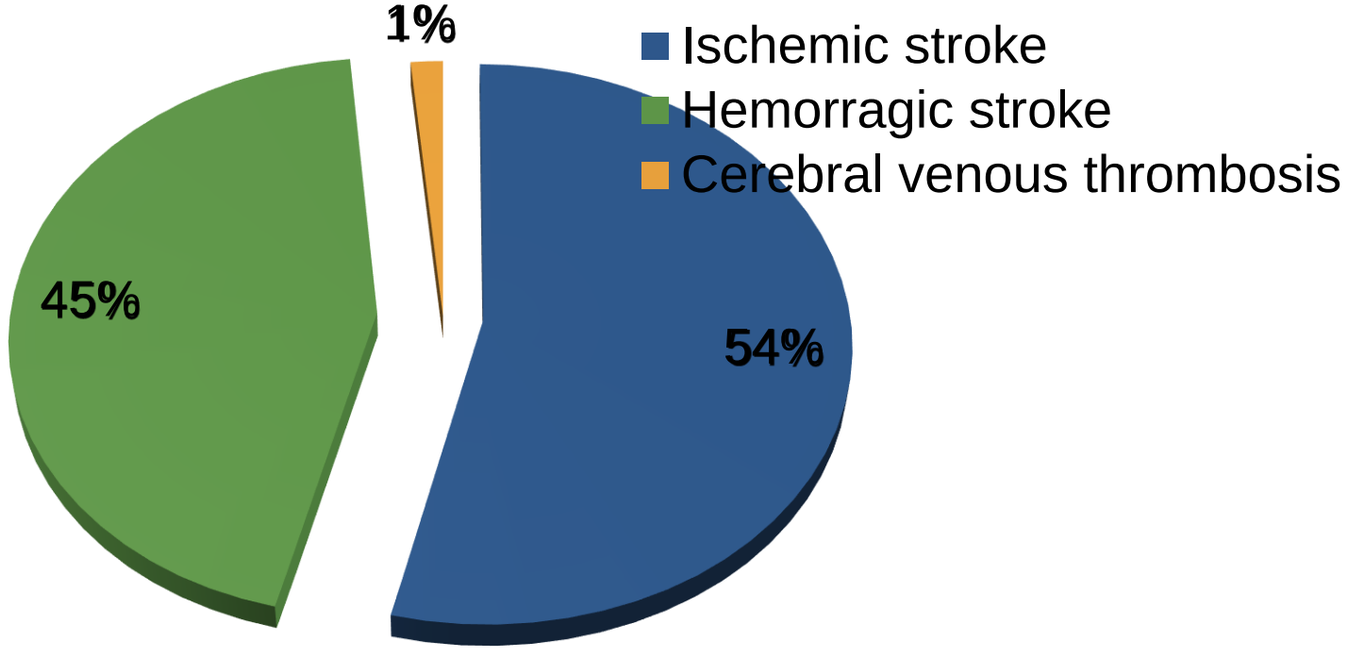
Robinson RG,2nded.New York, Cambridge University Press, 2006, p 470

Risk factors of PSD (3)
Stroke characteristics and lesion location

Brain DT Scan : Left hemisphere : 38 patients (58.5%)

Right hemisphere : 27 patients (41.5%).

Distribution of the vascular lesions



Napon C and al. Post stroke depression in Burkina Faso. Pan Afr Med J, 13, 3.

Risk factors of PSD (4)
Stroke characteristics and lesion location

- Recent systematic reviews argue against an association between PSD and the type or the mechanism of stroke.

- **Left frontal or left basal ganglia has been extensively investigated as a risk factor for PSD.** *This correlation has not been done by the africans studies.*

Risk factors of PSD (5)
Medical and psychiatric history

Medical History		
Hypertension	107	82.3
Diabetes	24	18.5
Other Physical Condition (e.g. obesity and heart diseases)	4	3.1
Medication Use (Anti-hypertensives, anti-diabetics, anti-coagulant, e.t.c)	99	76.2
Family History (Stroke, Hypertension, Diabetes)	49	37.7
Alcohol Use	34	26.2
Psychosocial Stressors	102	78.5

A. Ojagbemi et al. / Post-stroke major depression in Nigeria

Risk factors of PSD (6)
Medical and psychiatric history

- Hypertension and hypercholesterolemia appear to have no relation with PSD.

- Patients with PSD might be more likely to have a history of diabetes mellitus.

- A personal or a family history of depression or anxiety or both was also consistently identified as a risk factors for PSD.

De Ryck A, Brouns R, Geurden M, et al. J Geriatr Psychiatry Neurol 2014; 27:147–158

Johnson JL, Minarik PA, Nyström KV, et al. J Neu- rosci Nurs 2006; 38(suppl):316–327

25. Tenev VT, Robinson RG, Jorge RE. Am J Geriatr Psychiatry 2009; 17:276–280

Risk factors of PSD (7)
Social support

- The number of social ties was shown to be inversely correlated with the severity of PSD
- The lack of social support at admission was associated with the onset of PSD at 3-months follow-up.

Herrmann N, Black SE, Lawrence J, et al. Stroke 1998; 29:618–624

Treatment (1)

- Few African studies have addressed therapeutic aspects of the disease

- In our study, many associations of the treatment were found.

Treatment (2)

Distribution of PSD according to the medical treatment

Treatment	Numbers	Percentage
Paroxétine	13	46.5
Amitriptyline	2	7,2
Méprobamate	1	3.5
Psychotherapy only	9	32.1
Psychotherapy + Amitriptyline	1	3.5
Psychotheray + Paroxétine	2	7.2
Total	28	100

Napon C and al. Post stroke depression in Burkina Faso. Pan Afr Med J, 13, 3.

Evolution (1)

- Evolution in 2 months after hospitalization has been appreciated in 31/65 patients in our study
- 34/65 others did not comply with their follow-up consultation
    - 22/65 patients always had PSD
    - 9/35 were no more depressed

Napon C and al. Post stroke depression in Burkina Faso. Pan Afr Med J, 13, 3.

Evolution (2)

- Two months after the introduction of antidepressant treatment, there has been a sharp loss in terms of number of patients followed. There are many reasons :

  - **Financial and geographical access** of medicines

  - **Other types of medication including traditional** lead patients to abandon the treatment

  - **Cost of the treatment** combining with other medications is quickly depleting patients not covered by insurance

Napon C and al. Post stroke depression in Burkina Faso. Pan Afr Med J, 13, 3.

Conclusion

- PSD is common in Africans but appears to be of mild severity in the majority of cases
- It compromises functional prognosis, and increases the risks of morbidity and mortality
- It occurs early after stroke in the majority of cases, and it is connected to some encephalic locations
- PSD should be sought systematically in all post-stroke hemiplegic patients, in the early phase

Thank you