











Prevalence And Factors Associated With Dementia Among Retirees Attending The CNSS Central Payment Centre In Libreville - Gabon : A Cross-Sectional Study

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Received: 03-09-2025; Revised: 16-10-2025; Accepted: 27-10-2025

DOI: <https://dx.doi.org/10.4314/eajns.v5i2.5>

ABSTRACT

Background: Dementia is a major cause of disability in the elderly. Retired people, considered an inactive population, are exposed to several risk factors for dementia. However, research on dementia in retired people is scarce. **Objective:** To study the prevalence and factors associated with dementia among retirees of the CNSS in Libreville in 2024. **Setting and Methods:** This was a descriptive and analytical cross-sectional study conducted at the Central Agency of the National Social Security Fund (CNSS) in Libreville over a four-month period, from August 01 to November 30, 2024. The study population consisted of pensioners registered with the CNSS central agency in Libreville who were present during the study period. A total of 203 retirees were included in the study. The presence of dementia was defined after confirmation by a neurologist, based on DSM-V criteria. **Results:** A total of 203 pensioners were included in the study. They were predominantly female (109 women, 97 men), with a sex ratio of 0.89. The mean age was 66.5 ± 7.6 years. The prevalence of dementia was 6/203 (3.0%, 95% CI: 1.09–6.32). In univariable analyses, dementia was associated with older age, hypertension, and prior stroke. **Conclusion:** Dementia is a growing public health problem in Gabon, particularly among retirees. It highlights the need to integrate cognitive issues into aging and social security policies.

Keywords: Dementia, Prevalence, Associated factors, Retirees, Libreville

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INTRODUCTION

Dementia is defined as "a clinical syndrome characterized by progressive impairment of cognitive and affective faculties severe enough to disrupt daily functioning and diminish quality of life" [1]. It is one of the main age-related chronic pathologies [2]. It is estimated that more than 57.4 million people worldwide will suffer from dementia in 2019, with 60% living in low- and middle-income countries. This figure is set to rise, with nearly 152.8 million people expected to have dementia by 2050 [3]. Sub-Saharan Africa (SSA) is home to nearly 7.62

million people with dementia [4]. Age is clearly the major risk factor for dementia. However, other factors, such as low socio-economic status and social isolation, also contribute to the onset of dementia. Thus, the group of retired people is the focus of particular attention on cognition [5]. Retirees often face reduced income and fewer opportunities for mentally stimulating activities, both of which can increase dementia risk. However, cognitive decline is not equivalent to extreme age [7-9]. This implies that even the early retiree can be demented. There is

good evidence that cognitive stimulation can generate new neurons in adulthood, thus creating a buffer against cognitive decline in old age [10]. In SSA, the majority of retirees live in a more difficult socio-economic context [11]. The decrease, or even total loss, of regular income is a widely recognized factor in anxiety and depression, implicated in dementia. In recent decades, our countries have opted for a policy that makes social security one of the key factors in consolidating solidarity and promoting social justice. To this end, social security

METHODS

Study design and setting

This cross-sectional, descriptive and analytical study was conducted in Libreville, the capital of Gabon, specifically at the central agency of the National Social Security Fund (CNSS). The CNSS is a private institution managing public social security services for salaried workers, civil servants, and voluntary insured individuals. The study period extended over four months, from August 1st to November 30th, 2024.

Study population and selection criteria

The target population comprised retirees listed in the CNSS registry who visited the central payment center during the study period, aged 50 years or older, and who provided written informed consent. The primary outcome was the presence of dementia, diagnosed by a neurologist based on the DSM-5 criteria. Secondary outcomes included cognitive impairment defined by low performance on the brief Community Screening Instrument for Dementia (CSI-D <7) and/or Dubois' five-word test (<10/10). The minimum sample size was calculated using Daniel Schwartz's formula, assuming a dementia prevalence of 3.2% (based on a 2014 study in Parakou, Benin)[13], a precision of 2.5%, and a confidence level of 95%, resulting in a required sample of 190 retirees. All eligible and consenting retirees encountered during the study period were included.

Data collection procedures

Data collection was performed using a standardized and pretested questionnaire digitized on KoboToolbox. The assessment involved two phases. The first phase was a screening phase held at the

RESULTS

Out of 5018 retirees listed at the CNSS central agency, 4496 were banked and no longer needed to visit the payment center. Therefore, only retirees present at the payment center during the study period were considered. Among the 289 approached, 203 agreed to participate (response

has become a major concern. In Gabon, the Caisse Nationale de Sécurité Sociale (CNSS) is a social protection system for pensions. The impact of dementia on this protection system could be considerable, both in terms of healthcare expenditure and in redefining new healthcare policies [12]. The primary objective was to estimate the prevalence of dementia among CNSS retirees in Libreville, and the secondary objective was to explore associated factors using a two-phase diagnostic process.

CNSS offices, during which sociodemographic, medical, and behavioral data were gathered, and cognitive screening tests were administered. The second phase, conducted at the retirees' homes, involved physical measurements (blood pressure, height, weight) and repeated cognitive testing. Participants with suspected cognitive impairment were further assessed by a neurologist who used DSM-5 criteria along with neuropsychological assessments, the Hachinski. Score, NINCDS-ADRDA criteria, and the MADRS scale for depression.

Data analysis

Data were analyzed using SPSS version 25. Quantitative variables were expressed as means \pm standard deviation and qualitative variables as frequencies and percentages. The Student's t-test and Chi-square (or Fisher's exact test) were used for comparisons. Given the small number of dementia cases (n=6), multivariable regression was not performed. Analyses were limited to descriptive statistics and univariable associations. Significance was set at $p < 0.05$.

Ethical considerations

This study received approval from the General Directorate of the CNSS. It also forms part of a doctoral thesis in medicine (Thesis No.1534). The research protocol was approved by the ethics committee of the University of Health Sciences. All participants provided written informed consent orally; confidentiality and anonymity were ensured throughout the research. All participants gave written informed consent; oral consent was accepted only when literacy was a barrier, with a witness present.

rate: 70.24%). Among these, 50 retirees (24.63%) showed signs of cognitive impairment during the screening phase and were referred for neurological assessment.

At the end of the study, 203 retirees were included.

The mean age was 66.5 ± 7.6 years, with extremes of 50 and 92 years. Women (109) and men 97 with a sex ratio of 0.89. The 61-70 age group was 56.2%, with a secondary education level of 63.5%. The median monthly income (Q1; Q3) was 180,000 FCFA (80000; 300000). Table I summarizes the sociodemographic and economic characteristics of the included retirees.

More than one subject in two was hypertensive (56.2%) and about one subject in five was diabetic (19.2%). Table II summarizes the clinical and behavioral characteristics of the included retirees.

Of these, 49 were assessed (one lost to follow-up), and 6 were diagnosed with dementia, yielding a prevalence of 3.0% (95% CI: 1.09%–6.32%). The subtypes of dementia identified included Alzheimer's disease (n=2, 33.3%), vascular dementia (n=2, 33.3%), mixed dementia (n=1, 16.7%), and frontotemporal dementia (n=1, 16.7%).

The dementia population had an average age of 78.33 ± 03.67 years, with extremes ranging from 71 to 81 years. The sex ratio was 1 in favor of both sexes. Among them, 02 were retired and had no education (33.3%), and 03 were blue-collar workers (50.0%). The median monthly income (Q1; Q3) was 153,500 (61,500; 475,000) and 83.3% of them had a good social life. Cognitive impairment was significantly associated with age ($p=0.001$), level of education ($p=0.013$) and occupation ($p=0.049$). The rest of the data is summarized in Table III.

Dementia was significantly associated with age ($p < 0.001$). Gender, level of education The prevalence of dementia in the population of retirees with no education (10.0%) was higher than that of retirees with primary or secondary education. Dementia was not associated with clinical or behavioral characteristics Table IV illustrates the factors associated with dementia.

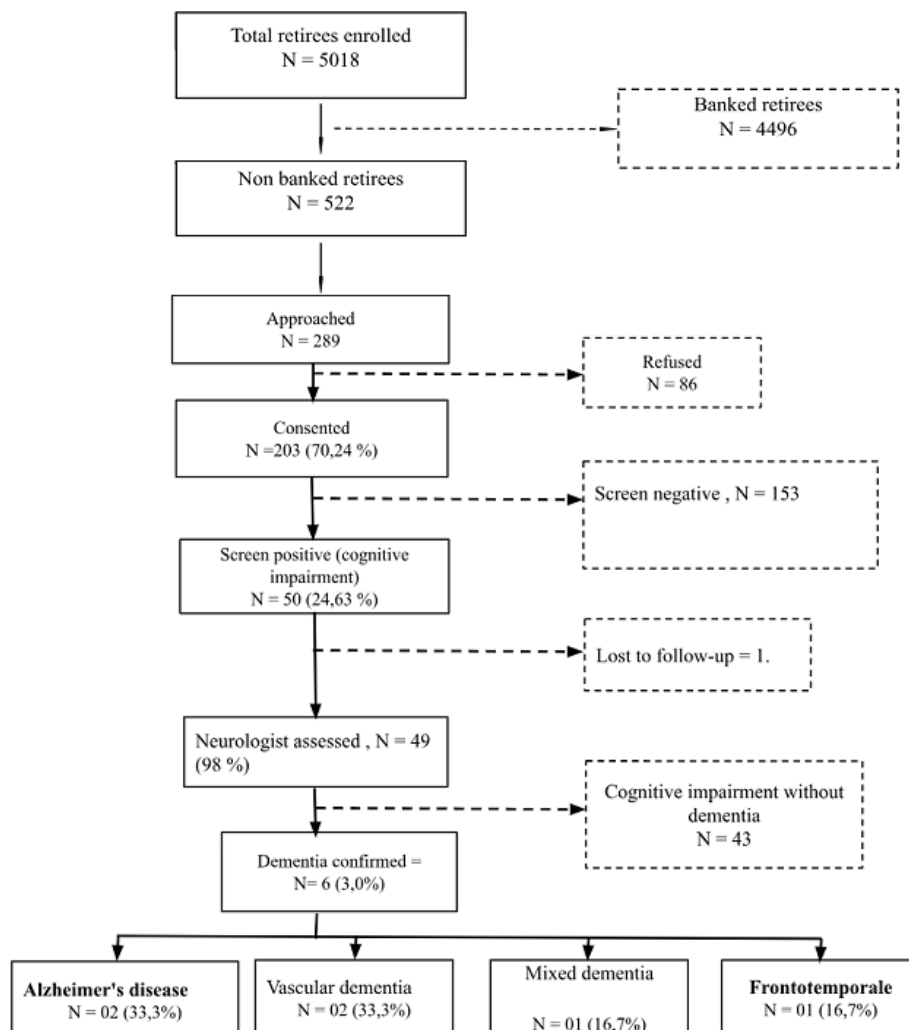


Figure 1: Flow chart showing the inclusion of retired individuals at the CNSS Central Agency in Libreville in 2024.

Table I: Distribution of retirees by socio- demographic and economic characteristics.

| | Number (n) | Frequency (%) |
|--|------------|---------------|
| Age (years) | | |
| [50-60] | 38 | 18,7 |
| [61-70] | 114 | 56,2 |
| [71-80] | 41 | 20,2 |
| > 80 | 10 | 4,9 |
| Education level | | |
| None | 20 | 9,9 |
| Primary | 54 | 26,6 |
| Secondary and higher | 129 | 63,5 |
| Marital status | | |
| Single | 53 | 26,1 |
| Married/cohabiting | 94 | 46,3 |
| Divorced | 9 | 4,4 |
| Widowed | 47 | 23,2 |
| Profession | | |
| Manual workers | 84 | 41,4 |
| Supervisors | 55 | 27,1 |
| Middle management | 45 | 22,2 |
| Upper management | 19 | 9,4 |
| Monthly income | | |
| < 150.000 | 88 | 43,3 |
| [150.000-300.000] | 70 | 34,5 |
| > 300.000 | 45 | 22,2 |
| Recent change in financial status | | |
| No | 64 | 31,5 |
| Yes | 139 | 68,5 |
| Relationships | | |
| Bad | 15 | 7,4 |
| Good | 188 | 92,6 |

Table II: Distribution of retirees according to their clinical and behavioral characteristics

| | Number (n) | Frequency (%) |
|--------------------------------|------------|---------------|
| No | 172 | 84,7 |
| Yes | 31 | 15,3 |
| HIV | | |
| No | 201 | 99,0 |
| Yes | 2 | 1,0 |
| History of depression | | |
| No | 190 | 93,6 |
| Yes | 13 | 6,4 |
| Cranioencephalic trauma | | |
| No | 201 | 99,0 |
| Yes | 2 | 1,0 |
| Psychiatric history | | |
| No | 193 | 95,1 |
| Yes | 6 | 3,0 |
| Don't know | 4 | 2,0 |
| BMI (kg/m2) | | |
| Normal | 66 | 32,5 |
| Overweight | 72 | 35,5 |
| Obese | 65 | 32,0 |
| BP | | |
| Normal | 83 | 40,9 |
| High | 120 | 59,1 |
| Alcohol | | |
| No | 81 | 39,9 |
| Yes | 122 | 60,1 |
| Tobacco | | |
| No | 183 | 90,1 |
| Yes | 20 | 9,9 |
| Physical activity | | |
| No | 163 | 80,3 |
| Yes | 40 | 19,7 |

Table III: Prevalence of cognitive disorders according to socio-demographic characteristics among retirees of the CNSS central agency in Libreville in 2024.

| | Total (N) | Number (n) | Prevalence (%) | OR | IC95% | P.value |
|------------------------|-----------|------------|----------------|------|-------------|--------------|
| Gender | | | | | | |
| Male | 97 | 28 | 28,9 | 1 | 1 | 0,180 |
| Female | 106 | 22 | 20,8 | 0,64 | [0,34-1,23] | |
| Age (years) | | | | | | 0,001 |
| [50-60] | 38 | 9 | 23,7 | 1 | 1 | |
| [61-70] | 114 | 18 | 15,8 | 0,60 | [0,24-1,49] | |
| [71-80] | 41 | 19 | 46,3 | 2,78 | [1,06-7,32] | |
| > 80 | 10 | 4 | 40,0 | 2,15 | [0,49-9,34] | |
| Education level | | | | | | 0,007 |
| None | 20 | 9 | 45,0 | 1 | 1 | |
| Primary | 54 | 18 | 33,3 | 0,61 | [0,21-1,74] | |
| Secondary and above | 129 | 23 | 17,8 | 0,26 | [0,10-0,74] | |
| Marital status | | | | | | 0,222 |
| Single | 53 | 11 | 20,8 | 1 | 1 | |
| Married/cohabiting | 94 | 20 | 21,3 | 1,03 | [0,45-2,36] | |
| Divorced | 9 | 7 | 22,2 | 1,09 | [0,20-6,01] | |
| Widowed | 47 | 17 | 36,2 | 2,16 | [0,89-5,28] | |
| Profession | | | | | | 0,049 |
| Workers | 84 | 29 | 34,5 | 1 | 1 | |
| Supervisors | 55 | 11 | 20,0 | 0,47 | [0,21-1,05] | |
| Middle management | 45 | 7 | 15,6 | 0,35 | [0,14-0,88] | |
| Senior management | 19 | 3 | 15,8 | 0,36 | [0,10-1,32] | |
| Monthly income | | | | | | 0,111 |
| < 150000 | 88 | 28 | 31,8 | 1 | 1 | |
| [150000-300000] | 70 | 14 | 20,0 | 0,54 | [0,26-1,12] | |
| > 300000 | 45 | 8 | 17,8 | 0,46 | [0,19-1,12] | |

Table IV: Prevalence of dementia according to sociodemographic factors among CNSS retirees in Libreville in 2024.

| | Total (N) | Dementia (n) | Prevalence (%) | OR | IC95% | P.value |
|--|-----------|--------------|----------------|-------|---------------|-------------------|
| Gender | | | | | | 0,912 |
| Male | 97 | 3 | 3,1 | 1 | 1 | |
| Female | 106 | 3 | 2,8 | 0,91 | [0,18-4,63] | |
| Age (years) | | | 40,0 | | | p<0,001 |
| > 80 | 10 | 1 | 10,0 | 1 | 1 | |
| [50-60] | 38 | 0 | 0,0 | - | - | |
| [61-70] | 114 | 0 | 0,0 | - | - | |
| [71-80] | 36 | 5 | 12,2 | 1,25 | [0,13-12,07] | |
| Education level | | | | | | 0,108 |
| None | 20 | 2 | 10,0 | 1 | 1 | |
| Primary | 54 | 2 | 3,7 | 0,35 | [0,04-2,64] | |
| Secondary and above | 129 | 2 | 1,5 | 0,14 | [0,02-1,07] | |
| Marital status | | | | | | 0,451 |
| Single | 53 | 1 | 1,9 | 1 | 1 | |
| Married/cohabiting | 94 | 2 | 2,1 | 1,13 | [0,10-12,77] | |
| Divorced | 9 | 0 | 0,0 | - | - | |
| Widow(er) | 47 | 3 | 6,4 | 3,54 | [0,36-35,31] | |
| Profession | | | | | | 0,589 |
| Workers | 84 | 3 | 3,6 | 1 | 1 | |
| Supervisors | 55 | 2 | 3,6 | 1,02 | [0,16-6,30] | |
| Middle management | 45 | 0 | 0,0 | - | - | |
| Senior management | 19 | 1 | 5,3 | 1,50 | [0,15-15,26] | |
| Monthly income | | | | | | 0,719 |
| < 150000 | 88 | 2 | 2,3 | 1 | 1 | |
| 150000-300000 | 70 | 3 | 4,3 | 1,92 | [0,31-11,85] | |
| > 300000 | 45 | 1 | 2,2 | 0,98 | [0,09-11,08] | |
| Recent change in financial status | | | | | | |
| No | 64 | 1 | 1,6 | 1 | 1 | 0,426 |
| Yes | 139 | 5 | 3,6 | 2,35 | [0,27-20,54] | |
| AH | | | | | | 0,028 |
| No | 89 | 0 | 0,0 | 1 | 1 | |
| Yes | 114 | 6 | 5,3 | 1,06 | [1,01-1,10] | |
| Diabetes | | | | | | 0,872 |
| No | 164 | 5 | 3,0 | 1 | 1 | |
| Yes | 39 | 1 | 2,6 | 0,84 | [0,09-7,37] | |
| STROKE | | | | | | p<0,001 |
| No | 172 | 1 | 0,6 | 1 | 1 | |
| Yes | 31 | 5 | 16,1 | 32,88 | [3,69-292,75] | |

DISCUSSION

The burden of dementia in sub-Saharan Africa adds to the many health challenges facing the continent, including communicable diseases (malaria, HIV, tuberculosis) and the growing emergence of non-communicable diseases (hypertension, diabetes), in a context often marked by political conflict. Despite an increase in the number of elderly people, research into dementia remains rare, particularly among retired people, who are exposed to specific factors such as social isolation, economic constraints and poor access to specialized care. At the end of this study, the prevalence of dementia in the population of CNSS retirees in Libreville was 3.0%. This is comparable to that found in Benin in a similar population, i.e. 3.2% [13]. Comparison with other studies in SSA remains difficult, given that the majority of studies are carried out in hospitals or in the general population. However, the prevalence of dementia in our regions varies considerably, from 2.29% to 21.60% [14,15]. This variation depends on the diagnostic criteria and

methodology used. There are also variations according to geographical location [16]. In 2009, Guerchet et al observed that the prevalence of the disease was 6.7% in Brazzaville and 8.1% in Bangui [15]. These figures were attributed to armed conflict. Chronic stress and depression are recognized risk factors in the development of dementia [17,18]. In the West, research into dementia in retired people is limited. In 1997, Perkins et al in the United States observed a prevalence of dementia of 2.65% among retirees aged 60 and over. It was similar among Hispanic and black men, at 4.75 and 4.80 respectively, and lowest among white men, at 2.42% [19]. Rivera Díaz et al in 2024, Guatemala observed that cognitive decline in retired Guatemalan army men had severe cognitive impairment, highest at 96%, in the memory area [20]. This study identified several factors associated with the onset of dementia. Arterial hypertension is well documented in the literature, due to its impact on cerebrovascular lesions, favoring

vascular or mixed dementias [21-24]. Thus, the link between a history of stroke and the onset of dementia can be explained in this study [25,26].

As observed, the association between dementia and level of education has already been described [27]. These results can be explained by the cognitive reserve theory, which explains that individuals with a high level of education will have a greater reserve of cognitive capacity [28]. Indeed, education improves knowledge of dementia risk factors, and increased use of available screening programs, [29]. At the end of this study, change in financial status was not significantly associated with dementia. Nevertheless, the prevalence of dementia was higher in the population of subjects who reported a change in financial status. Guerchet *et al.* in 2010 in Congo Brazzaville found that change in financial status was a factor associated with dementia [15]. The literature suggests that advantaged social classes benefit from better access to education, cognitively stimulating activities and reduced chronic stress [30]. Dementia among retirees represents a growing public health issue, which goes beyond the medical sphere to affect the social and economic fields. Social security, as a key player in the protection of the insured, has a strategic role to play in prevention, detection and care. Comprehensive, multidisciplinary and early support is essential to limit the impact of this pathology on individuals, families and society. It is therefore necessary to establish strategies that promote quality of life for people with both late-onset and early-onset dementia. Social Security's representative payment program faces a delicate balance in the face of dementia: many people [31]. It would be useful to evaluate resources that could protect retirees from memory decline [32].

CONCLUSION

This pilot study found a 3% prevalence of dementia among CNSS retirees attending the payment centre in Libreville. It also identified key associated factors, including age, hypertension, and stroke. These findings highlight the need to integrate cognitive health into public health and social protection strategies for the elderly in Gabon. Understanding and addressing these risk factors is essential for developing effective national dementia policies,

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improving care, and reducing disease burden.

Acknowledgements:

The authors would like to thank the CNSS Directorate, all participating retirees, and the field team for their valuable contributions to this study.

Competing Interests:

The authors declare that they have no financial or personal relationships that may have inappropriately influenced them in writing this article.

Author's Contributions:

J.N.M. conceived the study. G.M.G., G.A.M.M., and J.S.J.A.E. participated in data collection and analysis. C.M.M., K.B.B.O., and M.A.S.D. helped with interpretation. N.D.M., A.N., C.H.M., J.A.E., S.M.K., and P.K.N. contributed to manuscript writing and critical revision. All authors approved the final manuscript.

Ethical Considerations:

This study received approval from the General Directorate of the CNSS. It also forms part of a doctoral thesis in medicine (Thesis No.1534). The research protocol was approved by the ethics committee of the University of Health Sciences. All participants provided written informed consent oral; confidentiality and anonymity were ensured throughout the research.

Funding Information:

This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

Data Availability :

The data supporting the findings of this study are available from the corresponding author upon reasonable request.

Disclaimer:

The views and opinions expressed in this article are those of the authors and do not necessarily reflect the official policy or position of their affiliated institutions.

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