

# The profile and impact of probable dementia in a sub-Saharan African community: results from the Ibadan Study of Aging

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## Abstract

**Objective:** This study aimed to determine the profile of dementia in a sub-Saharan Africa country and assess its effects on role functioning and quality of life. **Methods:** Using a multistage, stratified, clustered sampling of households in the Yoruba-speaking areas of Nigeria, representing 22% of the national population, 2152 persons aged 65 years and above were studied. Probable dementia was evaluated using a validated cognitive test — the 10-Word Delay Recall Test. Activities of daily living (ADL), instrumental ADL, and quality of life were also assessed. **Results:**

The prevalence of probable dementia in this sample was 10.1% (95% confidence interval, 8.6–11.8). Female sex and increasing age were risk factors. Also, lifetime history of alcohol use doubles the risk. Affected persons had relatively preserved functioning and quality of life. **Conclusion:** The findings suggest that the diagnosis of dementia may be downwardly biased in this culture due to relatively preserved levels of social and functional roles.

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*Keywords:* Dementia; Prevalence; Role functioning; Quality of life

## Introduction

Dementia is a growing problem worldwide [1,2]. With increasing longevity, the health and social costs of the disorder are bound to increase. In spite of the scourge of human immunodeficiency infection and acquired immunodeficiency syndrome on its populations, sub-Saharan African countries can expect the number of their elderly people to grow substantially in the next several decades [3]. Estimates of the proportions of such persons who may be affected by dementia are crucial for policy planning. Although dementia appears to be the most studied disease of elderly people in Africa, the number of studies is still relatively few [4]. Researchers in Ibadan, Nigeria, in collaboration with colleagues in Indianapolis, USA, have

followed up large cohorts of community-dwelling Yoruba Nigerians and African Americans and have provided data on the prevalence, incidence, and the putative risk factors for dementia and Alzheimer's disease (AD), the commonest type of dementia, using both the *DSM-IV* and *ICD-10* classifications [5,6]. Interestingly, the findings suggest that the prevalence and incidence rates of dementia and AD were significantly lower in the Yoruba than in African Americans. However, the study in Ibadan was conducted in a relatively socially homogenous inner-city section of the city, and thus, it did not permit examination of the association of dementia with socioeconomic indices of interest. Also, extrapolation of results from one study to other parts of the same region, not to mention the whole country, is fraught with problems because interactions between genes and environment have been shown to be important in AD pathogenesis. It thus becomes important that similar studies be carried out in other parts of the same country, involving groups or people of same ethnic origin, to determine the possible environmental factors involved.

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This study reports the results of a survey that was conducted among elderly Yoruba residing in the southwest and north-central parts of Nigeria. We determined the prevalence of probable dementia as well as its association with role functioning and quality of life among persons aged 65 years and above.

## Method

### Sample

The Ibadan Study of Aging is a community-based survey of the mental and physical health status as well as the functioning and disability of elderly persons (aged 65 years and above) residing in the Yoruba-speaking areas of Nigeria, consisting of eight contiguous states in the south-western and north-central regions (Lagos, Ogun, Osun, Oyo, Ondo, Ekiti, Kogi, and Kwara). These states account for about 22% of the Nigerian population (approximately 25 million people). The survey was conducted between November 2003 and August 2004.

Respondents were selected using a four-stage area probability sampling of households. In the first stage of the sampling, 14 strata were created from an ordered list of all local government areas (LGAs) in seven of the states on the basis of 2 strata per state (rural or urban). LGAs in Lagos State were constituted into one self-representing stratum on the basis of the size and cosmopolitan nature of the state. The LGAs thus formed the primary sampling units (PSUs). An LGA is a geographic unit with a defined administrative and political structure. Two LGAs were selected from each of the 14 strata (except in Kogi State where there was only one rural LGA), with the probability of selection proportional to size. With the 17 self-representing PSUs in Lagos, a total of 44 PSUs were obtained. (One selected PSU in Kwara was subsequently dropped before fieldwork commenced in view of an ongoing civil strife in the LGA.) In the second stage, four enumeration areas (EAs) were systematically selected from each of the 43 PSUs. EAs are geographic units of LGAs and consist of between 50 and 70 housing units. They are a creation of the National Population Commission and are used by the Commission in the conduct of national census.

All selected EAs were visited by research interviewers prior to the interview phase of the survey, and an enumeration and listing of all the household units in which persons aged 65 years and older resided were conducted. These lists were entered into a centralized computer data file from which the survey sample of households was drawn randomly from each EA. In the final stage of the selection, which was conducted during the interview phase of the survey, interviewers obtained from an informant a full listing of all persons aged 65 years and above residing in the household. In each household with more than one eligible person (aged 65 years and fluent in the language of the

study, Yoruba), the Kish table selection method was used to select one respondent [7]. When the primary respondent was either unavailable following repeated calls (five repeated calls were made) or refused to participate, no replacement was made within the household. On the basis of this selection procedure, face-to-face interviews were carried out on 2152 respondents, for a response rate of 74.2%. Respondents were informed about the study and provided consent, mostly verbal but sometimes signed, before interviews were conducted.

The survey was approved by the University of Ibadan/University College Hospital, Ibadan Joint Ethical Review Board.

### Measures

#### Cognitive assessment

Assessment of cognition was performed using the adapted 10-Word Delay Recall Test (10-WDRS). Adapted from the Consortium to Establish a Registry of Alzheimer's Disease (CERAD) ten-word learning list [8], the 10-WDRS is a test of memory. In the learning phase, a respondent is asked to repeat a list of 10 words immediately after it is read out to him or her. This process is repeated three times to ensure adequate learning. The respondent is asked to recall the 10 words after 5 min, and the delayed recall score is the number (out of a possible 10) that is correctly recalled. In an earlier study in developing Asian, South American, and African country sites, the 10-WDRS was shown to have a discriminatory ability of 90 [95% confidence interval (CI), 89–91] for cases of dementia when compared with noncases and only 4.7% of group effect due to education [9].

The adapted 10-WDRS used in this survey is a component of the battery of tests included in the Indianapolis–Ibadan Dementia Project (IIDP), a community-based study that compares the prevalence and incidence of dementia among Yoruba Nigerians and African Americans aged 65 years and above [5,6]. In the adaptation, butter, arm, letter, queen, grass, and engine were taken from the original CERAD list. Ticket, pole, shore, and cabin were replaced with ocean, hut, tree, and nail. In the IIDP, a comprehensive clinical assessment formed the basis for the diagnosis of dementia, using both the *DSM-IV* and the *ICD-10* criteria. Drawing on data derived from the Ibadan component of that project, we used logistic regression models to classify demented from normal subjects based on the performance on the 10-WDRS after adjusting for sex and age. The results indicated that, in this setting, the 10-WDRS has a sensitivity of 76.9% and a specificity of 73.5% at a cutoff score threshold of 1/2. These values suggest that the 10-WDRS is a good and adequate tool for the diagnosis of probable dementia in this sample. A test–retest study of 38 respondents in the current sample, conducted about 7 days apart, also showed good reliability: an intraclass coefficient of 0.66 (95% CI, 0.35–0.82;  $P < .001$ ).

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