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Dementia incidence declined in African-Americans but not in Yoruba

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Abstract

Background: To compare dementia incidence of African-American and Yoruba cohorts aged ≥70 years enrolled in 1992 and 2001.

Methods: African-Americans residing in Indianapolis and Yoruba in Ibadan, Nigeria without dementia were enrolled in 1992 and 2001 and evaluated every 2–3 years until 2009. The cohorts consist of 1440 African-Americans, 1774 Yoruba in 1992 and 1835 African-Americans and 1895 Yoruba in the 2001 cohorts aged ≥70 years.

Results: In African-Americans, dementia and Alzheimer's disease (AD) incidence rates were significantly lower in 2001 than 1992 for all age groups except the oldest group. The overall standardized annual dementia incidence rates were 3.6% (95% confidence interval [CI], 3.2%–4.1%) in the 1992 cohort and 1.4% (95% CI, 1.2%–1.7%) in the 2001 cohort. There was no significant difference in dementia or AD incidence between the Yoruba cohorts.

Conclusions: Future research is needed to explore the reasons for the differential changes in incidence rates in these two populations.

Keywords: Dementia; Alzheimer's disease; Incidence; African-Americans; Nigerians

1. Introduction

With the aging of the population, the dementing disorders including Alzheimer's disease (AD) are widely recognized as a major public health problem worldwide. There have, however, been reports of significant decline in dementia prevalence [1–4]. It is not clear whether this decline in dementia prevalence was caused by lower dementia incidence or shorter survival of patients diagnosed with dementia [1]. A few studies have reported on dementia incidence trends over the past two decades with some reporting no change [5,6], whereas others report a decline in dementia incidence [7]. Few studies to date have examined changes in dementia incidence in African-Americans, and none were reported in African populations.

This study was part of the Indianapolis-Ibadan Dementia Project (IIDP). In this analysis, we compare age-specific incidence rates for dementia and AD between cohorts assembled in 1992 to those enrolled in 2001 in African-Americans in Indianapolis and Yoruba in Ibadan, Nigeria.

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2. Methods

2.1. Study participants

Participants were from the IIDP, a longitudinal study comparing dementia prevalence, incidence, and other health outcomes in two community-based cohorts. Recruitment to the study was conducted at two time points. In the first recruitment in 1992, cohorts of African-Americans aged ≥65 years living in Indianapolis and Yoruba age ≥65 years living in Ibadan, Nigeria, were enrolled in the study. In Indianapolis, interviewers went door-to-door to randomly sampled addresses to invite African-Americans (self-identified) aged ≥65 years to participate. In 1992, 2212 African-Americans were enrolled, whereas 249 (9.6%) refused, and 121 (4.7%) were too sick to participate. In Ibadan, the study was carried out in the Idikan area and adjacent wards, and a complete enumeration and census were conducted for study enrollment. In 1992, 2486 Yoruba individuals were enrolled, whereas 41 (1.6%) individuals were too sick or refused.

In 2001, the IIDP conducted another wave of enrollment in both populations. In Indianapolis, community-dwelling subjects were randomly selected from Medicare records, who identified themselves as African-Americans and were at least aged 70 years. The age cutoff for the 2001 cohorts was chosen to maintain comparability with the survivors in the 1992 cohort because the youngest participants in the 1992 cohort had since turned 70. Of 7583 eligible individuals, interviewers were able to contact 4433 by telephone or home visit. Of those contacted, 100 were deceased, 54 had moved to nursing homes, and 14 were not African-American. Of the remaining 4265 eligible individuals, 1892 (44%) were enrolled, 2020 (47%) refused, and 369 (9%) were too ill. In Ibadan, a house-to-house census was conducted in 2001 in which 34,733 individuals were enumerated in 3452 households, of which 3144 were aged ≥70 years. Of those eligible, 866 were already enrolled in the 1992 cohort and 1939 were enrolled in the 2001 cohort. There were no refusals in Ibadan during the 2001 enrollment.

All participants agreed to undergo regular follow-up cognitive assessment and clinical evaluations. The study was approved by the Institutional Review Boards of Indiana University-Purdue University of Indianapolis and University of Ibadan. All enrolled participants provided informed consent. In Ibadan, the consenting process involved reading the consent form to study participants, answering any questions they might have had, and obtaining a signature. For illiterate participants, a thumbprint was obtained. Details on the assembling of the original cohorts and the enrichment cohort were described elsewhere [8,9].

2.2. Study design

A prospective cohort design was used with a baseline evaluation followed by regular evaluations scheduled 2–3 years apart in both populations using identical assessment instruments. Participants in the 1992 cohorts were evaluated for up to seven times, in 1992, 1995, 1998, 2001, 2004, 2007, and 2009. Participants in the 2001 cohort were evaluated for up to four times, in 2001, 2004, 2007, and 2009.

A two-stage design was used at each evaluation with in-home cognitive and functional evaluations for all participants followed by a full diagnostic workup of selected participants based on the performance of stage 1 cognitive tests. After each stage 1 evaluation, study participants were divided into three performance groups (good, intermediate, and poor) based on their cognitive and functional scores obtained during the in-home assessment and changes in scores from previous evaluations [10]. Percentages sampled from each performance category were chosen to ensure that participants with the highest probability of dementia would be clinically assessed. All participants in the poor performance group were invited to be clinically assessed. Participants were randomly sampled from the intermediate performance group until 50% had clinical assessments and from the good performance group until 5% had clinical assessments.

Each clinically assessed participant was evaluated for the diagnosis of dementia or normal cognition, with further subtypes for those diagnosed with dementia (see section 2.4 on clinical evaluation in the following). All individuals diagnosed as demented were no longer followed for in-person evaluations.

2.3. Cognitive instruments

The community screening interview for dementia (CSID) was used during the first stage in-home assessment with a cognitive assessment of the study participant and an interview with a close relative evaluating the daily functioning of the participant. The CSID was developed by our group specifically for use in comparative epidemiologic studies of dementia in culturally disparate populations [11,12]. The cognitive assessment in CSID evaluates multiple cognitive domains (language, attention and calculation, memory, orientation, praxis, and comprehension and motor response), and details of its content and development are described elsewhere [12–14].

2.4. Clinical evaluation

Clinical evaluations included (1) a neuropsychological battery adapted from the Consortium to Establish a Registry of Alzheimer's Disease [13]; (2) a standardized neurologic and physical examination and functional status review (the clinician home-based interview to assess function) [14]; and (3) a structured interview with an informant familiar with the participant (most often a close relative) adapted from the Cambridge Examination for Mental Disorders of the Elderly informant interview [15,16]. Diagnosis was