

Mild Cognitive Impairment in Rural Tanzania: Prevalence, Profile, and Outcomes at 4-Year Follow-up

Stella-Maria Paddick, M.B.B.S., Aloyce Kisoli, M.Sc., Maria Samuel, M.B.B.S., Janice Higginson, M.B.B.S., William K. Gray, Ph.D., Catherine L. Dotchin, M.D., Anna R. Longdon, M.B.B.S., Andrew Teodorczuk, M.D., Paul Chaote, M.D., Richard W. Walker, M.D.

Objective: Mild cognitive impairment (MCI) is recognized as a high-risk condition for conversion to dementia, although data on outcomes of MCI in sub-Saharan Africa are scarce. We investigated outcomes of MCI over a 4-year period in Tanzania and considered risk factors for conversion to dementia. **Methods:** In a longitudinal cohort study in the Hai district, Tanzania, patients with MCI were identified during a two-phase prevalence study carried out in 2010. Of 1,198 people aged 70 years and over screened in phase I, a stratified sample of 296 were fully assessed in phase II. MCI was defined according to international consensus criteria. DSM-IV criteria were used for dementia diagnosis. Background demographic and risk factor data were collected, and neuropsychiatric symptoms were assessed using the neuropsychiatric inventory. Patients were followed-up in 2011, 2012 and 2014. **Results:** Forty-six MCI patients were identified. After adjusting for stratification, the crude prevalence of MCI was 7.0% (95% CI: 3.6–10.4). Over a 4-year period, 15 patients (32.6%) progressed to dementia, 2 patients (4.3%) returned to normal cognition, 1 developed late-onset schizophrenia, 8 patients (17.4%) had stable MCI, 19 patients (41.3%) died, and 1 refused assessment. Age, sex, education levels, body mass index, hypertension, and comorbidity were not associated with progression to dementia. **Conclusion:** In this rural Tanzanian population, rates of conversion from MCI to DSM-IV dementia were similar to those reported in high-income countries. Over a third of all patients had died at the 4-year follow-up. (Am J Geriatr Psychiatry 2015; ■:■–■)

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Received September 12, 2014; revised December 5, 2014; accepted December 5, 2014. From the Northumbria Healthcare National Health Service Foundation Trust, Department of Medicine (S-MP, MS, WKG, CLD, RWW), North Tyneside General Hospital, North Shields, United Kingdom; Institute of Neuroscience (S-MP), Newcastle University, Newcastle upon Tyne, United Kingdom; Hai District Hospital (AK, PC), Boma'ngombe, Kilimanjaro, Tanzania; Health Education North East (JH), Newcastle upon Tyne, United Kingdom; Institute for Ageing (CLD, AT), Newcastle University, Newcastle upon Tyne, United Kingdom; South Devon National Health Service Foundation Trust, Department of Medicine (ARL), Torbay Hospital, Torquay, United Kingdom; Northumberland, Tyne and Wear National Health Service Foundation Trust (AT), St Nicholas Hospital, Newcastle upon Tyne, United Kingdom; and Institute of Health and Society (RWW), Newcastle University, Newcastle upon Tyne, United Kingdom. Send correspondence and reprint requests to Stella-Maria Paddick, M.B.B.S., Department of Medicine, North Tyneside General Hospital, Rake Lane, North Shields, Tyne and Wear, NE29 8NH, United Kingdom. e-mail: stellamaria@doctors.org.uk

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INTRODUCTION

Currently, an estimated 2.1 million elderly people have dementia in sub-Saharan Africa (SSA).¹ As demographic transition and population aging continue, this number is likely to rise. In fact, current predictions estimate an increase in cases of 74%–90% by 2030, a much greater increase than predicted for developed countries.² Identification of risk factors for dementia in this population is therefore crucial to target health resources and inform preventive initiatives.

Mild cognitive impairment (MCI) is an intermediate state between normal cognition and dementia. The prevalence of MCI in population-based epidemiologic studies is believed to be 3%–19% in adults older than 65 years.^{3,4} Individuals with MCI are at high risk of developing dementia, with annual conversion rates of 12%–15% and around half developing dementia within 5 years.^{4,5} Although MCI is not a formal psychiatric diagnosis, the concept is now included in the *Diagnostic and Statistical Manual of Mental Disorders (DSM), Fifth Edition* as “minor neurocognitive disorder.”⁶ It is not included in the World Health Organization (WHO) *International Classification of Diseases, Tenth Revision (ICD-10)* criteria.⁷

Terminology and definitions of MCI have evolved, making comparisons between studies difficult. The most established consensus criteria define MCI as memory impairment identified by the subject or by an informant, objective deficits on cognitive testing, intact activities of daily living (or minimally impaired instrumental activities of daily living), and no dementia on clinical examination.⁸ These criteria were later expanded to allow more than one cognitive deficit to be present or a single nonmemory domain to be affected. An associated concept is cognitive impairment no dementia (CIND) in which after clinical assessment it is believed the person does not have normal cognition but is also not demented.⁹ However, this broader term makes comparisons between different populations complicated and is difficult to quantify.

There have been few studies of MCI or CIND in low- and middle-income countries (LMICs). Those that have been published indicate a prevalence of 1%–30% (Table 1). Higher rates, up to 40%, have been reported,¹⁰ but these studies have been carried out in low literacy populations and based on cognitive assessment only. There is great variability in the terms

and criteria used to define cognitive impairment in these studies, making comparison between studies difficult. A multicenter collaboration involving several centers in Latin America, alongside India and China, reported an age-standardized prevalence of 0.8%–2.4% for amnesic MCI with considerable variation between countries.¹¹

Follow-up studies from LMICs are even fewer and are summarized in Table 2. In SSA, there is only one published longitudinal study of cognitive impairment in the absence of dementia.¹² This study followed 87 CIND subjects from an initial cohort of 152 recruited from the Indianapolis-Ibadan Dementia Project. Over a 2-year period, 16.1% had converted to dementia, 25.3% reverted to normal cognition, and 58.6% remained stable. The study did not find any factors to be predictive of conversion to dementia from CIND. This may be partly because of the clinical heterogeneity of those who fall within the CIND category. A recent study from South Africa that assessed 140 elderly care home residents found 38 people (27.1%) had MCI according to the international consensus criteria.¹³ MCI was significantly associated with lower education levels.

Given the limited previous data from SSA, the aim of this study was to investigate the prevalence, profile, and outcome of MCI in a community-based population in rural Tanzania, both in terms of the annual rate of progression from MCI to dementia and reversion to normal cognition, and to consider possible risk factors for progression.

METHODS

This study received approval from the National Institute of Medical Research, Dar-es-Salaam, Tanzania. Signed informed consent was obtained from each participant, with a thumbprint obtained from those that could not read and write. The purpose and implications of the study were verbally explained. In cases where patients were unable to give valid consent, written consent was obtained from a close relative.

Case Identification

Prevalent cases of MCI were identified during a two-phase door-to-door community-based prevalence study of dementia in the Hai district, Northern

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