Alzheimer’s disease and other primary dementias

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Overview of presentation

• What is dementia? (including MCI)
• Alzheimer’s disease
• Dementia with Lewy Bodies and PDD
• Vascular dementia
• Other rarer syndromes – FTD, primary progressive aphasia, Huntington’s disease
• Dementia in Africa, including work from Tanzania
What is dementia?

- A clinical syndrome characterised by multiple cognitive deficits severe enough to interfere with daily functioning, including social and professional activities (Am Psych Assoc 1987)
- The irreversible cognitive decline consists of impairment of memory and at least one other domain, such as speech, praxis, executive function
- Dementia shortens life expectancy – median survival time with dementia ranges from 2 to 4 years after diagnosis
- Dementia is often under diagnosed, due to lack of recognition by both patients/families and medical staff
- Advanced age is the most significant risk factor, tend to be higher rates reported in females
- A primary dementia is a disease in which the dementia is the main presentation of the illness, so for example is not due to another disease such as HIV or MS
Dementia burden

- Dementia is one of a group of mental health disorders that are estimated to represent 13% of the total global burden of disease.
- In 2010 there were estimated to be 36 million people who had dementia worldwide.
- The prevalence is expected to double every 20 years as populations age, with 65.7 million affected in 2030 and 115.4 million in 2050. This rise will be disproportionately large in low- and middle-income countries.
- Currently, it is estimated that 58% of people with dementia live in low- and middle-income countries; rising to 71% by 2050.

Risk factors

• Genetic – apoE ε4 allele (early and late onset AD)
• Vascular – BP, DM, smoking, cholesterol, homocysteine, IHD, stroke, alcohol intake
• Psychosocial – low education levels, lower socioeconomic status, depression
• Toxin/oxidative stress – head trauma, vitamin deficiencies (A,E,C,B12, folate), aluminum and other heavy metals?
Protective factors

- Social network
- Antihypertensive treatment
- Physical activity
- Mentally stimulating activity
- Dietary factors (antioxidants, micronutrients)
- NSAIDs
Mild cognitive impairment (MCI)

- An interim state between normal ageing and dementia
- Still functionally independent
- Cognitive decline is reported more than normal age-related slowing
- Baseline intellectual state is important
- A distinct pathological process
- Risk of progression to dementia: 10 to 30% over 2 years, but up to 50% return to normal
- Increased mortality compared with cognitively normal individuals
- Predictors for conversion to dementia: apo E ε4 allele, those with most marked atrophy on CT scan, older age,
Dementia sub-types
Alzheimer’s disease

- Most common cause of dementia in old age
- Accounts for $\frac{1}{2}$ to $\frac{3}{4}$ of all cases of dementia
- Pathological hallmarks are plaques and neurofibrillary tangles with beta amyloid deposition in cerebral blood vessel walls
- Symptom load depends on where main burden of pathology is e.g. depression because of loss of serotonergic neurons in the cortex or memory problems relating to hippocampal atrophy
Who was Alzheimer?

• Alois Alzheimer – German Psychiatrist (1864-1915)
• Described a patient called Auguste Deter, 51 yrs old, living in an asylum in Frankfurt. She had a combination of behavioural symptoms and short term memory loss. He studied her for 5 years and when she died he performed a post mortem study of her brain and found plaques and tangles
• The description of the clinical case and PM findings was published and then used by other clinicians to make the diagnosis, the disease was later referred to as Alzheimer’s disease.
AD

- Diagnostic criteria: ICD 10 and DSM IV – must fulfill criteria for a dementia syndrome, have an insidious onset, a gradual progression, have no focal neurological signs and no evidence of a systemic/brain disease sufficient to cause dementia.
- Have to exclude depression or delirium
- Key symptoms – amnesia (failure to lay down new memory), aphasia, apraxia, agnosia (failure to correctly interpret a sensory input in the presence of an intact sensory system – eg recognising family), frontal-executive dysfunction (inflexible thinking and difficulty problem solving – test with verbal fluency)
- May also have behavioural and psychotic symptoms (BPSD) – e.g. hallucinations, apathy, aggression – many carers find these the most difficult aspect of the dementia to cope with
- Neurovegetative symptoms: sleep, eating
- Personality changes
- Physical symptoms – eg incontinence, seizures, weight loss
Prevalence rises after age 60 – prevalence doubles with each 5 year age rise up to 90. Beyond 90, may reduce again.

Apolipoprotein E – plasma protein involved in lipid transport, gene located on chrom 19. Three common alleles – ε2,3,4. ε4 allele much more common in people with AD. BUT – nearly 50% of those homozygous for E4 who live to be 90 yrs don’t have dementia and about 2/3 of those who get AD don’t have the ε4 allele.

Also high risk in Down’s syndrome – nearly all have features of AD by age 40 yrs.
AD prognosis

• Symptoms leading to institutionalisation – wandering, incontinence, aggression predict earlier need for 24 hour care in developed world
• Median survival from diagnosis around 5-6 yrs
• Progression can be highly variable and difficult to predict.
• Psychotic and extrapyramidal symptoms predict more rapid decline
• Long term use of antipsychotic drugs may worsen prognosis but may be necessary in the short term
Dementia with Lewy bodies (DLB)

• Consensus criteria for probable DLB: 2/3 of:
  1. fluctuating cognition with pronounced variations in attention and alertness
  2. recurrent well formed VH
  3. Spontaneous features of Parkinsonism

OR one of above plus one of:
  1. RBD
  2. Severe neuroleptic sensitivity
  3. Positive DAT scan
Characteristics of DLB

- Memory loss, visual hallucinations, paranoia, executive dysfunction
- Features of Parkinsonism
- Life expectancy around 7 years after diagnosis
- Condition can fluctuate markedly
- Very sensitive to neuroleptic medication – therefore should be avoided
- PM findings – lewy bodies in brainstem and cortex – collections of abnormal proteins within cells.
Parkinson’s disease dementia (PDD)

- Diagnostic criteria – must have a diagnosis of PD as per the UK PDS BBC
- Must fulfill the criteria for a dementia syndrome within the context of the PD
- Have to demonstrate a decline in cognition from baseline in that person
- Has to be sufficient to impair daily life
Characteristics of PDD

• Executive function - difficulty planning, initiating, shifting from one activity to another
• Visuo-spatial problems – hand-eye coordination, dexterity, reaching
• Language problems – impaired verbal fluency
• Often patients score well on MMSE as orientation and memory not affected till later stages, but more detailed cognitive screening (e.g. clock drawing tests, MOCA..) can detect sooner
• Older patients, older age at onset of PD, PIGD subtype, depression and visual hallucinators more likely to develop dementia than tremor dominant patients
When is it PDD and when is it DLB?

• Arbitrary 1 year cut off between PDD and DLB
• Cholinesterase inhibitors can be very useful – allow titration of levodopa higher for motor symptoms by helping to relieve VH and fluctuations.
Frontotemporal dementia (FTD)

- Usual onset is age 45-60 yrs – i.e. early
- Second commonest form of dementia in those under 65 yrs after AD
- Approx 40% will be misdiagnosed as AD
- On postmortem no amyloid deposition – but do find tangles with aggregates of Tau protein
- Can run in families – may have abnormality in Tau gene (FTDP -17)
- Characterized by progressive changes in social, behavioural and language function
- Symptoms – sudden change in personality, difficulties in maintaining normal social relationships
- Memory loss tends to occur later in disease stage
- Pick’s disease is the eponymous name for the most common of the FTDs
Vascular dementia

- Usually second most common form of dementia after AD
- NINDS-AIREN criteria: evidence of cerebrovascular disease (imaging or clinically), relationship between CVD and dementia (e.g., sudden onset, within 3 months of stroke)
- Many people with a dementia syndrome have multiple pathologies on PM (e.g., plaques and vascular pathology in AD)
- About 20-30% of people with an acute stroke develop dementia within 3 months
- More common in developing world where vascular risk factors are not as well treated (e.g., uncontrolled or undiagnosed hypertension)
- Step wise progression
Other dementias

- Huntington’s – look for family history (50% chance of affected children), younger age at onset, chorea, other psych problems, mild personality changes
- Primary progressive aphasia – often presents earlier in life (40s), profound language problems as presenting symptoms, memory loss later in course of disease
Dementia in Africa

- Estimated in 2010 2.76 million people with dementia in Africa, of those 2.1 million in SSA
- Subtypes – little data, but AD thought to account for around 60% - vascular dementia more common here
- Tidal wave on horizon with ageing population
Specific challenges

• How to document functional impairment in an elderly African living with extended family?
• Use of screening tools which have been developed in different culture – educational bias, cultural bias
• Stigma / health seeking behaviour
• Lack of healthcare professionals trained in dementia
• Lack of treatment
Functional impairment

- The DSM-IV criteria rely heavily on functional and occupational capacity and levels of social engagement.
- The lives of many older people living in rural SSA are often less cognitively demanding than those of their peers in high-income countries.
- It is possible that some people who would be diagnosed with early or mild DSM-IV dementia in high-income countries would not be diagnosed at all in SSA.
- Furthermore, many elderly cognitively impaired people in SSA have few functional and social limitations due to the protective nature of the extended family unit.
Indianapolis Ibadan dementia project

• Very successful and highly published project by Kathleen Hall and colleagues from Indianapolis, and Osuntokun, Oggunniyi and colleagues in Ibadan

• Developed the CSI’D’ – cognitive screening instrument for dementia and validated that it was less educationally biased than other tools

• Have published prevalence and incidence studies as well as genetic studies

• Comparison between African Americans in USA and Yoruba in Nigeria – prevalence lower in Yoruba.

• Apo E ε4 not a risk factor in Yoruba
The Indianapolis-Ibadan Dementia Project developed the Community Screening Instrument for Dementia (CSI-D) for dementia screening in low- and middle-income countries.

The instrument consists of 33 questions asked to the person suspected of having dementia (cognitive section) and 26 questions asked to an informant, usually a close relative or friend (informant section).

It takes 30-40 minutes to administer. Whilst, the CSI-D is excellent for research purposes, for routine clinical screening it is far from ideal.

Its use requires extensive training, the assessment is lengthy and computation of disease risk requires the assistance of a calculator or computer software.
10/66 dementia research group

• A cross-sectional study of dementia prevalence across 11 sites in 7 low-
and middle-income countries by the 10/66 Research Group (one site in
Nigeria and one in South Africa)
• Age-standardised prevalence of dementia, as defined by the 10/66
protocol (‘10/66 dementia’), to vary between 4.8% in rural China and
12.6% in Cuba (5)
• The prevalence of dementia according to the DSM-IV, calculated using a
computerised algorithm, was found to be consistently lower than that of
‘10/66 dementia’, varying between 6.3% in Cuba and 0.3% in rural India.
• Battery of cognitive tests designed to allow a diagnosis of dementia to be
made. The battery consists of four elements; the CSI-D cognitive and
informant sections, the Geriatric Mental State (GMS) examination, and the
Consortium to Establish a Registry for Alzheimer’s Disease (CERAD) 10
word task.
• 10/66 criteria for dementia diagnosis tend to show higher prevalence
rates than DSM IV diagnosis - over inclusive and include some MCI cases also
Why study dementia in sub-Saharan Africa?

Source: The 10/66 Dementia Research Group, KCL
Why study prevalence?

• Although there are increasing numbers of dementia prevalence studies from elsewhere, none previously from East Africa
• Incidence study difficult – insidious onset, lack of baseline information on cognition
• Helpful for guiding local health service about priorities for future
• No local memory clinic services – even hospital data sparse
• But we know stroke incidence is high and the population is ageing....
Why study dementia in Hai, Tanzania?

- Demographic Surveillance site since 1993
- Organised village health worker and clinical officer system – experienced in community-based research projects
- Reliable census data
- Previous published prevalence studies (stroke, PD, epilepsy, neurological disability, AF)
• Hai DSS – population 161,119
• Last census 2009
• Area demarcated by permanent geographic boundaries – rivers/main roads/national park boundary
• Little migration – most born, live and die in Hai
• Several tribes – mostly Chagga, but also Pare and Masai living within same villages
• Main language Swahili, but some elders only speak tribal languages
• Increasing coverage of mobile phones
Methodology

- Ethical approval from NIMR Tanzania and KCMC ethics committee
- Two stage door to door study
- 6 villages randomly chosen to represent Hai (mixture of highland and lowland)
- All those aged 70 years and older living within 6 villages invited
- Community Screening Instrument for Dementia – CSI-D used as main screening instrument (Swahili)
- Carried out by village health workers following training
- Important for building relationship with elderly people and carers – improved acceptance and very few refusals (4.9%, 62 people)
- Stratified sample assessed fully – at home
Clinical Assessment

- All “probable CSI-D dementia” cases seen
- Half of “possible CSID dementia” cases seen
- 5% “no dementia” cases seen
- Clinical assessment based on DSM-IV criteria
- 10/66 dementia research group protocol and 10/66 criteria used
- GMS-AGECAT
- Neuropsychiatric Inventory (NPI) – symptoms over previous month
- Carer demographic questionnaire
- Zarit Caregiver Burden Questionnaire
- 2 UK research doctors (one old age psych and one geriatrics)
- Diagnosis reviewed by UK old age psychiatry consultant
Study population

• Six villages – total population 34,078.
• 1260 eligible people aged over 70 on census (56% female)
• 1198 screened – 184 Probable dementia, 108 possible dementia and rest no dementia
• 78 cases (22 male) identified with DSM-IV criteria for dementia
• age-standardised prevalence of dementia was 6.4% (95% confidence interval: 4.9 to 7.9)
• Prevalence rates increased significantly with increasing age
• Age-standardised “10/66 dementia” prevalence 21.6% (95% CI 17.5 to 25.7%).

Comparison with other African studies

- Guerchet 2010 (Central African Republic and Congo EDAC)
- Guerchet 2009 (rural Benin)
- Ochayi 2006 (Jos, Nigeria)
- Hendrie 1995 (Ibadan, Nigeria)
Age standardised prevalence compared to other LMIC
Dementia sub-type

- Based on clinical criteria (DSM-IV dementia criteria plus NINCDS-ADRDA criteria were used for AD and NINDS-AIREN criteria and Hachinski score for VAD. Dementia with Lewy Bodies (DLB) and Frontotemporal Dementia (FTD) were diagnosed by international consensus criteria)

- CT brain arranged for those in whom it was clinically appropriate

- AD = 35 cases (44.8%)
- VaD = 33 cases (42.3%)
- PDD = 3 cases (3.8%)
- LBD = 2 cases (2.6%%)
- Mixed aetiology = 5 cases (6.4%)

- Those with VaD had significantly higher diastolic BP and higher systolic BP (though this did not reach significance) than those with AD
Significance of Initial Findings

• Dementia prevalence comparable to Western studies.
• Higher rate of vascular dementia than expected.
• High rate of hypertension (untreated) in the population.
• Treatment of hypertension in middle age may be important public health message in this population.
Health beliefs around dementia in Tanzania

• Qualitative study of 41 people with dementia and their caregivers
• Half the patients didn’t know they had an illness
• None knew the term “dementia”
• Locally referred to as “disease of old people”, “memory loss disease”
• Majority thought it was a normal part of ageing
Health beliefs 2

• Causes of dementia:
• 14 thought it was due to demons, curses, witchcraft, life stress (eg bereavement)
• 6 thought it was due to old age, stroke, high BP, diabetes or malaria
• None of the patients had sought medical help specifically for their dementia
• Stigma – some carers reported hiding their relative with dementia
• Associated with moderate degree of caregiver burden
Description of symptoms in Hai

• Shouting out during the night
• Lost in conversation
• Talking about stories from the past
• Forget to eat or change clothes
• Get lost
• Sit in one place for a very long time
• Doing repeated things over and over again
• Forget the names of family members
Behavioural and psychological symptoms of dementia in Hai
Results - NPI Inventory

% of respondents who scored positive for:

- Dementia
- MCI
- No Dementia

<table>
<thead>
<tr>
<th>Behavior</th>
<th>% (Dementia)</th>
<th>% (MCI)</th>
<th>% (No Dementia)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delusions</td>
<td>10</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Hallucinations</td>
<td>15</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>Agitation/Aggression</td>
<td>20</td>
<td>15</td>
<td>5</td>
</tr>
<tr>
<td>Depression/Dysphoria</td>
<td>25</td>
<td>20</td>
<td>5</td>
</tr>
<tr>
<td>Anxiety</td>
<td>30</td>
<td>25</td>
<td>5</td>
</tr>
<tr>
<td>Elation/Euphoria</td>
<td>35</td>
<td>30</td>
<td>5</td>
</tr>
<tr>
<td>Apathy/Indifference</td>
<td>40</td>
<td>35</td>
<td>5</td>
</tr>
<tr>
<td>Disinhibition</td>
<td>45</td>
<td>40</td>
<td>5</td>
</tr>
<tr>
<td>Irritability/Lability</td>
<td>50</td>
<td>45</td>
<td>5</td>
</tr>
<tr>
<td>Motor Disturbance</td>
<td>55</td>
<td>50</td>
<td>5</td>
</tr>
<tr>
<td>Nighttime Behaviours</td>
<td>60</td>
<td>55</td>
<td>5</td>
</tr>
<tr>
<td>Appetite/Eating</td>
<td>65</td>
<td>60</td>
<td>5</td>
</tr>
</tbody>
</table>
### BPSD symptoms ranked by frequency

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Percentage present</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anxiety</td>
<td>46.7</td>
<td>1</td>
</tr>
<tr>
<td>Agitation/Aggression</td>
<td>37.3</td>
<td>2</td>
</tr>
<tr>
<td>Night-time behavioural disturbance</td>
<td>34.7</td>
<td>3</td>
</tr>
<tr>
<td>Irritability/lability</td>
<td>33.3</td>
<td>4</td>
</tr>
<tr>
<td>Dysphoria/Depression</td>
<td>32</td>
<td>5</td>
</tr>
<tr>
<td>Apathy</td>
<td>30.7</td>
<td>6</td>
</tr>
<tr>
<td>Hallucinations</td>
<td>26.7</td>
<td>7</td>
</tr>
<tr>
<td>Aberrant motor behaviour</td>
<td>25.3</td>
<td>8</td>
</tr>
<tr>
<td>Appetite/Eating</td>
<td>25.3</td>
<td>8</td>
</tr>
<tr>
<td>Delusions</td>
<td>17.3</td>
<td>10</td>
</tr>
<tr>
<td>Disinhibition</td>
<td>17.3</td>
<td>10</td>
</tr>
<tr>
<td>Elation</td>
<td>2.7</td>
<td>12</td>
</tr>
</tbody>
</table>

### BPSD symptoms ranked by carer distress score

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Total score for all patients</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anxiety</td>
<td>91</td>
<td>1</td>
</tr>
<tr>
<td>Agitation/Aggression</td>
<td>79</td>
<td>2</td>
</tr>
<tr>
<td>Night-time behavioural disturbance</td>
<td>76</td>
<td>3</td>
</tr>
<tr>
<td>Irritability/lability</td>
<td>66</td>
<td>4</td>
</tr>
<tr>
<td>Dysphoria/Depression</td>
<td>59</td>
<td>5</td>
</tr>
<tr>
<td>Apathy/Indifference</td>
<td>59</td>
<td>5</td>
</tr>
<tr>
<td>Appetite/Eating disturbance</td>
<td>46</td>
<td>7</td>
</tr>
<tr>
<td>Hallucinations</td>
<td>39</td>
<td>8</td>
</tr>
<tr>
<td>Disinhibition</td>
<td>37</td>
<td>9</td>
</tr>
<tr>
<td>Aberrant motor behaviour</td>
<td>33</td>
<td>10</td>
</tr>
<tr>
<td>Delusions</td>
<td>29</td>
<td>11</td>
</tr>
<tr>
<td>Elation</td>
<td>3</td>
<td>12</td>
</tr>
</tbody>
</table>
88% of people with dementia had at least one NPI symptom.

Significant difference between those with DSM-IV dementia and those without.
Prevalence of psychotic symptoms – combining GMS AGECAT and NPI data
Comparison with other developed and developing world studies

• Ropacki and Jeste (systematic review of 55 studies) – 41% had psychosis - more common in African Americans.
• European AD consortium 2007 – 96% had at least one symptom.
• In Western studies – apathy often most common followed by depression.
• Ferri et al 10/66 study -70.9% had at least one symptom.
BPSD common and frequently problematic and distressing.

Often seen as bigger issue than memory loss.

Important public health issue for carer support and education.
Future and ongoing work – the IDEA study – Lalupon in Nigeria and Hai, TZ

- Development of a bedside cognitive screening tool for use by nurses, medical students, doctors, AHPs etc – under diagnosis and barriers to screening/diagnosis with current tools
- Development of a Tanzanian IADLs tool for functional impairment
- Trial of CST (outcomes – QOL for patients, ZBI for carers, cognitive function)
- Awareness raising project for dementia
- OT input for all patients
Conclusions

- VAD accounted for a greater proportion of dementia cases in Hai than expected.
- No association of dementia with blood pressure or obesity.
- But, significantly higher systolic and diastolic BP in vascular dementia.
- BPSD present and troublesome for patients and carers.
- Little knowledge of the disease at a local level.
- Health beliefs reflect some concern about causes.
- Age standardised prevalence of dementia similar to developed world.
- Difficulties in screening, lack of trained healthcare professionals leads to lot of undiagnosed cases.
- Caregiver burden high.
Thank you

- Acknowledgments
- Dr Anna Longdon and Dr Stella Maria Paddick
- Mr Aloyce Kisoli
- Dr Felicity Dewhurst and Dr Matthew Dewhurst
- Dr Keith Gray
- Dr Declare Mushi
- Prof Richard Walker
- Hai district enumerators and supervisors and DMO

- All patients and carers involved in the study

- Funding source – Academy of Medical Sciences Clinical Lecturer start up grant and BGS Registrar start up grant
## Occupation in Hai district over 70 population

<table>
<thead>
<tr>
<th>Primary Occupation</th>
<th>Secondary Occupation</th>
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<tbody>
<tr>
<td><strong>1053</strong></td>
<td><strong>508</strong></td>
</tr>
<tr>
<td>Unskilled (farming/pruning/breaking stones)</td>
<td>Unskilled (farming/pruning/breaking stones)</td>
</tr>
<tr>
<td><strong>48</strong></td>
<td><strong>43</strong></td>
</tr>
<tr>
<td>Fundi (craft/mechanic etc)</td>
<td>Fundi (craft/mechanic etc)</td>
</tr>
<tr>
<td><strong>20</strong></td>
<td><strong>16</strong></td>
</tr>
<tr>
<td>Semi-skilled (driver, soldier, security)</td>
<td>Semi-skilled</td>
</tr>
<tr>
<td><strong>16</strong></td>
<td><strong>56</strong></td>
</tr>
<tr>
<td>Biashara (small business, market, shop)</td>
<td>Biashara (small business, market, shop)</td>
</tr>
<tr>
<td><strong>5</strong></td>
<td><strong>3</strong></td>
</tr>
<tr>
<td>Service (i.e. hotel, maid)</td>
<td>Service</td>
</tr>
<tr>
<td><strong>21</strong></td>
<td><strong>14</strong></td>
</tr>
<tr>
<td>Tech/professional (nurse, teacher, pastor, farming official or vet officer)</td>
<td>Tech/professional</td>
</tr>
<tr>
<td><strong>26</strong></td>
<td><strong>545</strong></td>
</tr>
<tr>
<td>nothing</td>
<td>No other occupation (i.e. main occupation only)</td>
</tr>
<tr>
<td><strong>8</strong></td>
<td><strong>8</strong></td>
</tr>
<tr>
<td>Missing value</td>
<td>Missing value</td>
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</table>
Highest Educational Level Achieved in Rural Hai District Cohort
Illiteracy was associated with probable dementia by CSI-D.

<table>
<thead>
<tr>
<th>Probable dementia by CSI-D</th>
<th>Some literacy</th>
<th>Illiterate</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Well</td>
<td>Probable dementia</td>
</tr>
<tr>
<td>Men</td>
<td>326</td>
<td>26</td>
</tr>
<tr>
<td>Women</td>
<td>225</td>
<td>24</td>
</tr>
</tbody>
</table>
Logistic regression models for age and sex as independent predictors of dementia.

<table>
<thead>
<tr>
<th>Model</th>
<th>Predictor</th>
<th>B</th>
<th>Sig.</th>
<th>Odds ratio</th>
<th>Lower</th>
<th>Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lancet 10/66 dementia</td>
<td>Age (years)</td>
<td>.086</td>
<td>.000</td>
<td>1.090</td>
<td>1.053</td>
<td>1.127</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>.706</td>
<td>.010</td>
<td>2.026</td>
<td>1.186</td>
<td>3.461</td>
</tr>
<tr>
<td></td>
<td>Constant</td>
<td>-6.713</td>
<td>.000</td>
<td>1.001</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinical DSM IV dementia</td>
<td>Age (years)</td>
<td>.052</td>
<td>.000</td>
<td>1.053</td>
<td>1.024</td>
<td>1.083</td>
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<tr>
<td></td>
<td>Female</td>
<td>.242</td>
<td>.413</td>
<td>1.274</td>
<td>.713</td>
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<tr>
<td>Algorithm derived DSM IV</td>
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