DEMENTIA DIAGNOSIS - DOCUMENTATION

Hannie Comijs
Tessa van den Kommer
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In LASA we have data from several cognitive tests, but a clinical dementia diagnosis on the basis of formal criteria is missing. Using the available MMSE's (Mini-Mental State Examination, a screening test for dementia, Folstein et al 1975), a telephone a shortened MMSE from people who would no longer participate (from D measurement), or an IQ code (Informant Questionnaire on Cognitive Decline in the Elderly;. Jorm et al, 1988) by the respondent (C measurement) or proxy (from the C measurement), we created a composite variable of people who are very likely have diagnosed dementia. Additionally, GPs data (dementia diagnosis by a general practitioner or specialist), relevant information listed on the respondent contact forms (RCF's), data recording used in psycho-geriatric nursing and information about cause of death (ICD coding different causes of dementia - to 2008 available) were used. The variable we created reflect a possible dementia, and when using it you have to interpret the findings with caution, because we are not completely sure that those persons are really dement.

Table 1 Summary of the numbers of people we have data

| **B** 1992/93 | **C** 1995/96 | **D** 1998/99 | **E** 2001/02 | **2B*** 2002/03 | **F** 2005/06 | **G** 2008/09 | **H** 2011/12 |
|---|---|---|---|---|---|---|---|
| N=3.107 | N=2.545 | N=2.076 | N=1.691 | N=1002 | N=2.165 | N=1.818 | N=1.522 |
| MMSE: n=3.091 | MMSE: n=2.292 | MMSE: n=1.871 | MMSE: n=1.469 | MMSE: n=997 | MMSE: =1.904 | MMSE: n=1.600 | MMSE: N=1.303 |
| | - | short MMSE[1]: n=124 | short MMSE[1]: n=121 | | short MMSE[1]: n=136 | short MMSE[1]: n=112 | short MMSE[1] n=97 |
| | IQ-code resp[2]: n=163 | - | - | | - | - | |
| | IQ-code proxy[3]: n=76 | IQ-code proxy[3]: n=73 | IQ-code proxy[3]: n=90 | | IQ-code proxy[3]: n=116 | IQ-code proxy[3]: n=95 | IO-code proxy[3] n=171 |

*2B is new cohort of 55-65 year olds. These people were added on the sample after this baseline measurement - thus being part from F, G and H measurements

[1] Shortened MMSE (phone interview) = item 01: year; item 04: day of the week; item05: month; item 08: two streets in the neighborhood; item 10: address; item 11: repeat three words; item 12: 100-7 subtraction or item 13: backward spelling; item 14: remember three words. The total score is based on nine items - the best score of item 12 or 13 is counted. Maximum score = 16.

[2] IQ code by telephone for respondents who did not want to participate in the interview: 6 questions about decline in the past 10 years, namely: remember conversations; remembering his / her address and telephone number; dealing with major household appliances; make decisions; handling money for groceries; arrange finances. Scoring a 5-point scale: 1 = much better, 3 = unchanged, 5 = much worse. Scores ranging from 1- 30.

[3] IQ code is conducted by telephone with the proxy from the respondents who did not want to participate in the interview.

The diagnosis of ‘possible dementia’ is determined by:
1. Difference scores on the MMSE of respondents between to measurement cycles (> 2 SD above average decline in the whole group)

2. The difference scores on short (by telephone) MMSE of dropouts (> 2 SD above average decline from the whole sample).

3. IQ code> 28 points to cognitive decline reflecting a decline in at least four areas.

4. Subsequently, those variables were longitudinally cleaned based on subsequent measurement cycles:
– if MMSE score from a next cycle was available: further deterioration of more than 1 SD: xdement = 1.
– respondents with no follow-up measurements: xdement = 3.
– respondents who did not deteriorate more than 1 SD in the subsequent cycle, remained stable or progressed, but had a MMSE ≤ 18: xdement = 4.
– respondents with conflicting or inconsistent information, or when too little information is available: xdement=5.

5. RCF's were checked from people with missing values after deterioration (code 3, 4 and 5).
– when RCF pointed to possible cognitive impairment or dementia, xdement is recoded to 1.

6. Data from general practitioner
– when dementia diagnoses is reported by a doctor or specialist xdement is recoded to 1.

7. Data on homing (014, 601 files)
- If housing type was as psycho-geriatric nursing home (≤ 3 years after the last interview) xdement is recoded to 1.

8. Cause of death (z991)
- If cause of death was dementia (≤ 3 years after the last interview) xdement is recoded to 1.

The variables are called: cdement, ddement, edement, fdement, gdement and hdement and can be obtained from Jan Poppelaars. Also the syntaxes can be obtained from Jan Poppelaars.

**1995 / 96 (Cycle C)**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | no dementia | 2449 | 59,6 | 96,8 | 96,8 |
| | dementia at C | 42 | 1,0 | 1,7 | 98,5 |
| | undetermined: no data at subsequent wave(s) | 29 | ,7 | 1,1 | 99,6 |
| | undetermined: no persistent decline/increase but MMSE <= 18 | 2 | ,0 | ,1 | 99,7 |
| | undetermined, insufficient/ contradictory data | 8 | ,2 | ,3 | 100,0 |
| | Total | 2530 | 61,6 | 100,0 | |
| Missing | System | 1579 | 38,4 | | |
| Total | | 4109 | 100,0 | | |

**1998 / 99 (Cycle D)**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | no dementia | 1941 | 47,2 | 94,1 | 94,1 |
| | dementia at D | 53 | 1,3 | 2,6 | 96,7 |
| | dementia at previous wave | 20 | ,5 | 1,0 | 97,6 |
| | undetermined: no data at subsequent wave(s) | 42 | 1,0 | 2,0 | 99,7 |
| | undetermined: no persistent decline/increase but MMSE <= 18 | 2 | ,0 | ,1 | 99,8 |
| | undetermined: inconsistent/ contradictory data | 5 | ,1 | ,2 | 100,0 |
| | Total | 2063 | 50,2 | 100,0 | |
| Missing | System | 2046 | 49,8 | | |
| Total | | 4109 | 100,0 | | |

**2001/02 (Cycle E )**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | no dementia | 1553 | 37,8 | 92,5 | 92,5 |
| | dementia at E | 44 | 1,1 | 2,6 | 95,1 |
| | dementia at previous wave | 36 | ,9 | 2,1 | 97,3 |
| | undetermined: no data at subsequent wave(s) | 39 | ,9 | 2,3 | 99,6 |
| | undetermined: no persistent decline/increase but MMSE <= 18 | 4 | ,1 | ,2 | 99,8 |
| | undetermined: inconsistent/ contradictory data | 3 | ,1 | ,2 | 100,0 |
| | Total | 1679 | 40,9 | 100,0 | |
| Missing | System | 2430 | 59,1 | | |
| Total | | 4109 | 100,0 | | |

**2005/06 (Cycle F)**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | no dementia | 1982 | 48,2 | 94,6 | 94,6 |
| | dementia at F | 57 | 1,4 | 2,7 | 97,3 |
| | dementia at previous wave | 23 | ,6 | 1,1 | 98,4 |
| | undetermined: no data at subsequent wave(s) | 26 | ,6 | 1,2 | 99,7 |
| | undetermined: no persistent decline/increase but MMSE <= 18 | 5 | ,1 | ,2 | 99,9 |
| | undetermined: inconsistent/ contradictory data | 2 | ,0 | ,1 | 100,0 |
| | Total | 2095 | 51,0 | 100,0 | |
| Missing | System | 2014 | 49,0 | | |
| Total | | 4109 | 100,0 | | |

**2008/09 (Cycle G)**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | no dementia | 1520 | 37,0 | 93,3 | 93,3 |
| | dementia at G | 32 | ,8 | 2,0 | 95,2 |
| | dementia at previous wave | 48 | 1,2 | 2,9 | 98,2 |
| | undetermined: no data at subsequent wave(s) | 26 | ,6 | 1,6 | 99,8 |
| | undetermined: no persistent decline/increase but MMSE <= 18 | 2 | ,0 | ,1 | 99,9 |
| | undetermined: inconsistent/ contradictory data | 2 | ,0 | ,1 | 100,0 |
| | Total | 1630 | 39,7 | 100,0 | |
| Missing | System | 2479 | 60,3 | | |
| Total | | 4109 | 100,0 | | |

**2011/2012 (cycle H)**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | no dementia | 1237 | 30,1 | 90,0 | 90,0 |
| | dementia at H | 41 | 1,0 | 3,0 | 93,0 |
| | dementia at previous wave | 68 | 1,7 | 4,9 | 98,0 |
| | undetermined: no data at subsequent wave(s) | 26 | ,6 | 1,9 | 99,9 |
| | undetermined: no persistent decline/increase but MMSE <= 18 | 1 | ,0 | ,1 | 99,9 |
| | undetermined: inconsistent/ contradictory data | 1 | ,0 | ,1 | 100,0 |
| | Total | 1374 | 33,4 | 100,0 | |
| Missing | System | 2735 | 66,6 | | |
| Total | | 4109 | 100,0 | | |

For questions about these variables, please contact: Hannie Comijs: h.comijs@ggzingeest.nl or Tessa van den Kommer: t.vandenkommer@ggzingeest.nl.

The variables are used and described in:

- Van den Kommer TN, Deeg DJH, Van der Flier WN, Comijs HC. Time trend in persistent cognitive decline: results from the Longitudinal Aging Study Amsterdam. In prep.
- Alders P, Comijs HC, Deeg DJH. Changes in admission to long-term care institutions in the Netherlands: comparing the results of two cohorts over the period 1996-1999 and 2006-2009. European Journal of Ageing, in press.
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**References**


- Folstein MF, Folstein SE , McHugh PR. Mini-mental state: a practical method for the clinician. *J Psychiat Res*, 1975;12:189-198.
- Jorm AF, Korten AE. Assessment of cognitive decline in the elderly by informant interview. *Br J Psychiatr*, 1988;152:209–13.