

**Middle age self-report risk score predicts cognitive functioning and dementia
in 20 – 40 years**

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Supplementary Tables 1-6

Supplementary Table 1. The prevalence (N in parentheses) of non-independency/independency in daily activities by cognitive status in old age (>65 years).

	No	Yes, but I need help	Yes, I do not need any help
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Are you able to take care of your household? (N=2597)			
Demented	22.3% (58)	25.8% (67)	51.9% (135)
MICF or inconsistency between TELE & TICS	2.5% (27)	11.9% (129)	85.6% (929)
cognitive status			
Normal	0.8% (8)	5.8% (73)	93.5% (1171)
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Are you able to get around outside? (N=2596)			
Demented	3.8% (10)	16.9% (44)	79.2% (206)
MICF or inconsistency between TELE & TICS	1.1% (12)	4.7% (51)	94.2% (1021)
cognitive status			
Normal	0.2% (3)	2.5% (31)	97.3% (1218)
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Are you able to do shopping? (N=2597)			
Demented	26.2% (68)	16.2% (42)	57.7% (150)
MICF or inconsistency between TELE & TICS	5.6% (61)	8.1% (88)	86.3% (936)
cognitive status			
Normal	1.6% (20)	4.3% (54)	94.1% (1178)
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Are you able to dress & undress yourself? (N=2597)			
Demented	1.2% (3)	6.2% (16)	92.7% (241)
MICF or inconsistency between TELE & TICS	0.4% (4)	1.8% (20)	97.8% (1061)
cognitive status			
Normal	0.2% (2)	1.3% (16)	98.6% (1234)

Note. MICF = mild impairment in cognitive functioning; TELE = a telephone assessment for dementia; TICS = Telephone Interview for Cognitive Status.

Supplementary Table 2. The prevalence (N in parentheses) of dementia, mild impairment in cognitive functioning (MICF) and normal cognition in old age (>65 years) by middle age cognitive reserve (CR) score category for TELE and TICS.

	CR score									
	0-12	13	14	15	16	17	18	19	20	21-25
TELE										
Dementia	47.8% (97)	31.5% (41)	21.5% (34)	20.3% (57)	14.2% (39)	12.6% (53)	9.1% (19)	6.3% (17)	3.7% (6)	0.6% (1)
MICF	28.1% (57)	29.2% (38)	37.3% (59)	27.8% (78)	28.7% (79)	26.6% (112)	23.4% (49)	20.1% (54)	14.3% (23)	7.3% (13)
Normal	24.1% (49)	39.2% (51)	41.1% (65)	52.0% (146)	57.1% (157)	60.8% (256)	67.5% (141)	73.5% (197)	82.0% (132)	92.1% (164)
TICS										
Dementia	43.3% (88)	22.3% (29)	20.3% (32)	14.6% (41)	10.2% (28)	9.0% (38)	6.2% (13)	2.6% (7)	2.5% (4)	0% (0)
MICF	32.5% (66)	39.2% (51)	39.9% (63)	25.6% (72)	27.3% (75)	23.8% (100)	22.0% (46)	18.3% (49)	7.5% (12)	3.4% (6)
Normal	24.1% (49)	38.5% (50)	39.9% (63)	59.8% (168)	62.5% (172)	67.2% (283)	71.8% (150)	79.1% (212)	90.1% (145)	96.6% (172)

Note. TELE = a telephone assessment for dementia; TICS = Telephone Interview for Cognitive Status.

Supplementary Table 3. The prevalence (N in parentheses) of dementia in old age (>65 years) by middle age cognitive reserve (CR) score category in those with six years of education.

	CR score									
	0-12	13	14	15	16	17	18	19	20	21-25
Dementia	36.2% (50)	18.4% (21)	15.2% (22)	9.8% (21)	9.1% (19)	7.5% (22)	1.25% (1)	-	-	-
No dementia	63.8% (88)	81.6% (93)	84.8% (123)	90.2% (194)	90.9% (190)	92.5% (273)	98.75% (79)	-	-	-
Total	138	114	145	215	209	295	80	-	-	-
OR	1.00 (REF)	0.399	0.323	0.193	0.183	0.144	0.022	-	-	-
95% CI		0.220; 0.724	0.181; 0.575	0.109; 0.342	0.101; 0.332	0.083; 0.252	0.003; 0.166			

Note. Cases with dementia were categorized as demented by both TELE and TICS instruments; all others are considered as non-demented. OR = Odds ratio, 95%CI = 95% confidence intervals.

TELE = a telephone assessment for dementia, TICS = Telephone Interview for Cognitive Status.

REF = reference category for logistic model.

Supplementary Table 4. The prevalence (N in parentheses) of dementia in old age (>65 years) by dichotomic (0-11 vs. 12-19) middle age cognitive reserve (CR) score for different age groups. Prevalence of dementia by eight groups and c-statistics can be found in Supplementary Table 5.

	CR score 0 – 11	CR score 12 – 19	Total
Age ≥ 60 years			
Dementia	60.7% (34)	8.3% (1)	51.5% (35)
No Dementia	39.3% (22)	91.7% (11)	48.5% (33)
Age ≥ 54 – 59 years			
Dementia	23.5% (32)	13.7% (14)	19.3 % (46)
No Dementia	76.5% (104)	86.3% (88)	80.7% (192)
Age ≥ 47 – 53 years			
Dementia	14.2% (47)	4.7% (12)	10.0% (59)
No Dementia	85.8% (285)	95.3% (246)	90.0% (531)
Age ≥ 40 – 46 years			
Dementia	9.3% (42)	3.2% (19)	5.8% (61)
No Dementia	90.7% (411)	96.8% (575)	94.2% (986)
Age < 40 years			
Dementia	8.1% (12)	0.5% (1)	3.8% (13)
No Dementia	91.9% (137)	99.5% (191)	96.2% (328)

Note. Cases with dementia were categorized as demented according to both TELE and TICS instruments; all others are considered as non-demented. TELE = a telephone assessment for dementia, TICS = Telephone Interview for Cognitive Status.

Supplementary Table 5. The prevalence (N in parentheses) of dementia in old age (>65 years) by middle age cognitive reserve (CR) score for different age groups. Area under curve (AUC) is reported for each age group (95% confidence intervals in parentheses).

	CR score							
	0 – 9	10	11	12	13	14	15	16 – 19
	Age ≥ 60 years; N=68; AUC = 0.740 (0.630 - 0.850)							
Dementia	71.4 % (25)	36.4 % (4)	50.0% (5)	20.0 % (1)	0 % (0)	0 % (0)	0 % (0)	0 % (0)
No Dementia	28.6 % (10)	63.6 % (7)	50.0% (5)	80.0 % (4)	100 % (3)	100 % (1)	100 % (2)	100 % (1)
	Age ≥ 54 – 59 years; N=238; AUC = 0.605 (0.521 - 0.689)							
Dementia	23.4% (15)	32.3% (10)	17.1% (7)	25.0% (5)	11.1% (2)	13.9% (5)	9.1% (1)	5.9% (1)
No Dementia	76.6% (49)	67.7% (21)	82.9% (34)	75.0% (15)	88.9% (16)	86.1% (31)	90.9% (10)	94.1% (16)
	Age ≥ 47 – 53 years; N=590; AUC = 0.699 (0.632 - 0.767)							
Dementia	22.4% (28)	10.3% (10)	8.2% (9)	7.0% (6)	2.5% (1)	6.0% (4)	5.9% (1)	0% (0)
No Dementia	77.6% (97)	89.7% (87)	91.8% (101)	93.0% (80)	97.5% (39)	94.0% (63)	94.1% (16)	100% (48)
	Age ≥ 40 – 46 years; N=1047; AUC = 0.704 (0.643 - 0.766)							
Dementia	14.6% (21)	8.3% (10)	5.8% (11)	6.3% (11)	3.1% (4)	2% (3)	1.5% (1)	0% (0)
No Dementia	85.4% (123)	91.7% (110)	94.2% (178)	93.7% (164)	96.9% (124)	98% (147)	98.5% (65)	100% (75)
	Age < 40 years; N= 341 AUC = 0.818 (0.724 - 0.912)							
Dementia	11.1% (4)	14.6% (6)	2.8% (2)	0% (0)	2.5% (1)	0% (0)	0% (0)	0% (0)
No Dementia	88.9% (32)	85.4% (35)	97.2% (70)	100% (56)	97.5% (39)	100% (49)	100% (15)	100% (32)

Note. Cases with dementia were categorized as demented according to both TELE and TICS instruments; all others are considered as non-demented. TELE = a telephone assessment for dementia, TICS = Telephone Interview for Cognitive Status.

Supplementary Table 6. Linear regression models with cognitive reserve (CR) score (without age), cardiovascular disease status, ApoE genotype and family income.

	Model 1	Model 2	Model 3	Model 4	Model 5
N	2284	2284	1671	1671	2158
CR score	1.056 p <0.001	1.047 p <0.001	0.967 p <0.001	0.957 p <0.001	0.963 p <0.001
Cardiovascular disease	-	-0.573 p =0.038	-	-0.619 p =0.037	-
ApoE (ϵ 4+ vs. ϵ 4-)	-	-	-0.517 p =0.061	-0.505 p =0.067	-
Family income	-	-	-	-	0.154 p =0.077

Note. Dependent variable is total TELE/TICS score. All models include sex, age and follow-up time as covariates. TELE = a telephone assessment for dementia, TICS = Telephone Interview for Cognitive Status.