Supplementary materials

**Table S1.** The Subjective cognitive decline (SCD) questionnaire

|  |  |  |
| --- | --- | --- |
|  | Do you have following memory or other cognitive decline in the previous two years, comparing to your previous status (yes or no) | Cognitive domain |
| 1 | You often cannot find your stuff (ex. purse, key, glasses) | Memory |
| 2 | You frequently forget the date of your appointment with others or clinics | Memory |
| 3 | You cannot remember what you just saw from TV or news, or quickly forget it | Memory |
| 4 | You frequently forget to pay the utility bills or bank statement | Memory |
| 5 | You have difficulty finding the right words to express yourself | Language |
| 6 | You often feel difficulty understanding newspaper or books, or hard to understand what other people say | Language |
| 7 | You have problem to count how much you should pay or retrieve when you buy stuffs | Calculation |
| 8 | You often go the wrong way or cannot find direction when going out | Visuospatial  |
| 9 | It is hard for you to focus on one task, and become easier to be distracted | Executive  |
| 10 | It is hard for you to learn how to use new items in the house, such as kitchenware, appliances or TV controller | Executive  |
| 11 | It is hard for you to plan a thing you do not do every day, such as organizing appointment or a trip | Executive  |
| 12 | You feel easier to get anxious or angry when doing two things at once or things you never done before | Executive |
| Additional question |
| Generally, are you worry about that your daily life has been affected or even disturbed due to memory decline or the conditions mentioned above | General |

**Table S2.** Discrepancy scores of total SCC scores from participants and informants in the study population

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Participants’ SCC scores | Informants’ SCC scores | Mean difference | Standard deviation | p value |
| Cognitively unimpaired | 2.91 | 2.23 | 0.67 | 2.91 | 0.008 |
| Mild cognitive impairment | 3.45 | 4.66 | -1.21 | 3.73 | <0.001 |
| Dementia with ACS | 3.41 | 7.71 | -4.30 | 4.01 | <0.001 |

SCC: subjective cognitive complaints; ACS: Alzheimer’s clinical syndrome

Mean difference is calculated as participants’ SCC scores minus informants’ SCC scores

**Table S3.** SubgroupSCC scores in the study population

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | CU without SCC | CU with SCC | Early MCI | Late MCI | Dementia with ACS |
| Memory (0-4) | 0.8(1.0) | 1.6(1.1)† | 1.2(1.2)‡ | 1.3(1.2) | 1.4(1.4) |
| Language (0-2) | 0.3(0.5) | 0.6(0.7)† | 0.4(0.6)‡ | 0.4(0.7) | 0.4(0.6) |
| Calculation (0-1) | 0.1(0.2) | 0.1(0.3) | 0.1(0.3) | 0.1(0.3) | 0.1(0.3) |
| Visuospatial function (0-1) | 0.1(0.3) | 0.3(0.4)† | 0.2(0.4) | 0.2(0.4) | 0.2(0.4) |
| Executive function (0-4) | 1.2(1.2) | 1.8(1.3)† | 1.6(1.3)  | 1.6(1.3) | 1.4(1.3)# |

CU: cognitively unimpaired; SCC: subjective cognitive complaints; MCI: mild cognitive impairment; ACS: Alzheimer’s clinical syndrome;

Data provided as mean (SD)

† p<0.05 between normal without SCC and normal with SCC

‡ p<0.05 between normal with SCC and early MCI

\* p<0.05 between early MCI and late MCI

# p<0.05 between late MCI and dementia with ACS

**Table S4.** Comparisons of SCC scores in early MCI, late MCI and dementia with ACS patients with or without concerns

|  |  |  |
| --- | --- | --- |
|  | **Early MCI with concern****(N=94)** | **Early MCI without concern** **(N=216)** |
| Memory (0-4) | 1.9(1.3) | 0.9(1.0)\* |
| Language (0-2) | 0.7(0.8) | 0.3(0.5)\* |
| Calculation (0-1) | 0.2(0.4) | 0.1(0.3)\* |
| Visuospatial function (0-1) | 0.3(0.5) | 0.1(0.3)\* |
| Executive function (0-4) | 2.3(1.3) | 1.3(1.2)\* |
| Total SCC score (0-12) | 5.4(3.1) | 2.7(2.4)\* |

|  |  |  |
| --- | --- | --- |
|  | **Late MCI with concern** **(N=144)** | **Late MCI without concern****(N=266)** |
| Memory (0-4) | 2.0(1.2) | 1.0(1.1)\* |
| Language (0-2) | 0.7(0.8) | 0.3(0.6)\* |
| Calculation (0-1) | 0.2(0.4) | 0.1(0.2)\* |
| Visuospatial function (0-1) | 0.3(0.5) | 0.1(0.3)\* |
| Executive function (0-4) | 2.4(1.2) | 1.2(1.2)\* |
| Total SCC score (0-12) | 5.6(2.9) | 2.6(2.5)\* |

|  |  |  |
| --- | --- | --- |
|  | **Dementia with ACS with concern** **(N=114)** | **Dementia with ACS without concern** **(N=328)** |
| Memory (0-4) | 2.3(1.4) | 1.1(1.2)\* |
| Language (0-2) | 0.7(0.8) | 0.2(0.5)\* |
| Calculation (0-1) | 0.3(0.5) | 0.1(0.3)\* |
| Visuospatial function (0-1) | 0.4(0.5) | 0.1(0.3)\* |
| Executive function (0-4) | 2.1(1.4) | 1.1(1.2)\* |
| Total SCC score (0-12) | 5.9(3.5) | 2.7(2.7)\* |

CU: cognitively unimpaired; SCC: subjective cognitive complaints; MCI: mild cognitive impairment; ACS: Alzheimer’s clinical syndrome

\* p<0.05

Data provided as mean (SD)

**Table S5.** Memory and nonmemory SCC in linear regression of cognitive performances

**All population**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **B** | **95% CI of B**  | **P value** |
| **Age(yr)** | **-0.278** | **-0.337~-0.219** | **<0.001** |
| **Education(yr)** | **0.709** | **0.583~0.835** | **<0.001** |
| Sex † | -0.862 | -1.967~0.244 | 0.126 |
| **Family history ‡** | **1.324** | **0.242~2.407** | **0.017** |
| SCC\_P\_memory | 0.038 | -0.519~0.596 | 0.893 |
| SCC\_P\_nonmemory | -0.023 | -0.396~0.349 | 0.902 |
| **SCC\_I\_memory** | **-0.854** | **-1.331~-0.377** | **<0.001** |
| **SCC\_I\_nonmemory** | **-0.732** | **-1.042~-0.423** | **<0.001** |
| GDS | 0.126 | -0.083~0.335 | 0.238 |
| Anxiety/depression rating score | 0.174 | -0.483~0.832 | 0.603 |

B: unstandardized regression coefficient; CI: confidence interval;

SCC\_P\_memory: Memory subdomain SCC score from participants;

SCC\_P\_nonmemory: Nonmemory subdomain SCC score from participants;

SCC\_I\_memory: Memory subdomain SCC score from informants;

SCC\_I\_nonmemory: Nonmemory subdomain SCC score from informants;

GDS: Geriatric Depression Scale

QoL: Quality of life

†Reference category: male

‡Reference category: no family history

**Cognitively unimpaired**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **B** | **95% CI of B**  | **P value** |
| **Age(yr)** | **-0.073** | **-0.124~-0.023** | **0.005** |
| **Education(yr)** | **0.314** | **0.172~0.455** | **<0.001** |
| Sex † | -0.093 | -1.59~0.873 | 0.85 |
| Family history ‡ | 0.318 | -0.646~1.281 | 0.515 |
| SCC\_P\_memory | 0.076 | -0.379~0.53 | 0.742 |
| SCC\_P\_nonmemory | -0.196 | -0.539~0.147 | 0.259 |
| SCC\_I\_memory | -0.029 | -0.508~0.449 | 0.904 |
| SCC\_I\_nonmemory | 0.015 | -0.309~0.339 | 0.927 |
| **GDS** | **-0.195** | **-0.355~-0.035** | **0.018** |
| Anxiety/depression rating score | -0.173 | -0.857~0.511 | 0.617 |

B: unstandardized regression coefficient; CI: confidence interval;

SCC\_P\_memory: Memory subdomain SCC score from participants;

SCC\_P\_nonmemory: Nonmemory subdomain SCC score from participants;

SCC\_I\_memory: Memory subdomain SCC score from informants;

SCC\_I\_nonmemory: Nonmemory subdomain SCC score from informants;

†Reference category: male

‡Reference category: no family history

**Mild cognitive impairment**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **B** | **95% CI of B**  | **P value** |
| **Age(yr)** | **-0.148** | **-0.222~-0.074** | **<0.001** |
| **Education(yr)** | **0.593** | **0.444~0.743** | **<0.001** |
| Sex † | -1.089 | -2.429~0.25 | 0.111 |
| Family history ‡ | 0.114 | -1.199~1.428 | 0.864 |
| SCC\_P\_memory | 0.085 | -0.577~0.747 | 0.8 |
| SCC\_P\_nonmemory | 0.062 | -0.374~0.499 | 0.779 |
| SCC\_I\_memory | 0.303 | -0.27~0.876 | 0.299 |
| SCC\_I\_nonmemory | -0.103 | -0.492~0.286 | 0.602 |
| GDS | -0.08 | -0.325~0.164 | 0.519 |
| Anxiety/depression rating score | -0.555 | -1.333~0.224 | 0.162 |

B: unstandardized regression coefficient; CI: confidence interval;

SCC\_P\_memory: Memory subdomain SCC score from participants;

SCC\_P\_nonmemory: Nonmemory subdomain SCC score from participants;

SCC\_I\_memory: Memory subdomain SCC score from informants;

SCC\_I\_nonmemory: Nonmemory subdomain SCC score from informants;

†Reference category: male

‡Reference category: no family history

**Dementia with Alzheimer’s clinical syndrome**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **B** | **95% CI of B**  | **P value** |
| **Age(yr)** | **-0.194** | **-0.339~-0.049** | **0.009** |
| **Education(yr)** | **0.586** | **0.336~0.837** | **<0.001** |
| Sex † | -0.323 | -2.623~1.978 | 0.782 |
| Family history ‡ | 2.058 | -0.165~4.281 | 0.069 |
| SCC\_P\_memory | 0.465 | -0.725~1.655 | 0.441 |
| SCC\_P\_nonmemory | -0.698 | -1.466~0.069 | 0.074 |
| SCC\_I\_memory | -0.31 | -1.355~0.736 | 0.559 |
| SCC\_I\_nonmemory | -0.507 | -1.081~0.066 | 0.083 |
| GDS | 0.115 | -0.388~0.617 | 0.653 |
| Anxiety/depression rating score | 0.285 | -0.974~1.545 | 0.655 |

B: unstandardized regression coefficient; CI: confidence interval;

SCC\_P\_memory: Memory subdomain SCC score from participants;

SCC\_P\_nonmemory: Nonmemory subdomain SCC score from participants;

SCC\_C\_memory: Memory subdomain SCC score from informants;

SCC\_C\_nonmemory: Nonmemory subdomain SCC score from informants;

†Reference category: male

‡Reference category: no family history

**Table S6.** Comparison of cognitive performance based on concern status in different groups

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Total z score in****participant with concern** | **Total z score in****participant without concern**  | **P value** |
| All population | -7.55(8.39) | -7.16(8.36) | 0.452 |
| CU | -0.02(2.85) | 0.01(2.83) | 0.923 |
| Early MCI | -4.29(4.30) | -4.59(5.30) | 0.743 |
| Late MCI | -9.49(6.82) | -9.20(5.99) | 0.666 |
| Dementia with ACS | -17.81(8.26) | -16.43(8.01) | 0.219 |

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Total z score in****informant with concern** | **Total z score in****informants without concern**  | **P value** |
| **All population** | **-12.04(8.64)** | **-7.08(7.96)** | **<0.001** |
| CU | 0.36(2.64) | -0.15(2.79) | 0.404 |
| Early MCI | -6.55(5.62) | -4.88(5.33) | 0.066 |
| Late MCI | -9.80(6.64) | -9.70(6.11) | 0.9 |
| Dementia with ACS | -16.45(8.14) | -17.56(7.85) | 0.344 |

CU: cognitively unimpaired; MCI: mild cognitive impairment; ACS: Alzheimer’s clinical syndrome

Data provided as mean (SD)

**Fig. S1** Participants’ memory SCC scores (presented in the left chart) and non-memory SCC scores (presented in the right chart) in the study population



|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **CU without SCD** | **CU with SCD** | **Early MCI** | **Late MCI** | **Dementia with ACS** |
| **Memory SCC scores** | 0.8(1.0) | 1.6(1.1)† | 1.2(1.2)‡ | 1.3(1.2) | 1.4(1.4) |
| **Non-memory SCC scores** | 1.6(1.6) | 2.8(2.0)† | 2.3(2.0) | 2.3(2.0) | 2.1(2.2) |

CU: cognitively unimpaired; SCD: subjective cognitive decline; MCI: mild cognitive impairment; ACS: Alzheimer’s clinical syndrome

Data provided as mean (SD)

† p<0.05 between normal without SCD and normal with SCD

‡ p<0.05 between normal with SCD and early MCI

\* p<0.05 between early MCI and late MCI

# p<0.05 between late MCI and dementia with ACS