

**Additional file 1** Missing data information of HRQOL and covariates at 4 waves

|                                 | <b>Wave 1</b>     | <b>Wave 2</b>     | <b>Wave 3</b>     | <b>Wave 4</b>     |
|---------------------------------|-------------------|-------------------|-------------------|-------------------|
|                                 | <b>(N = 6182)</b> | <b>(N = 4268)</b> | <b>(N = 3424)</b> | <b>(N = 2407)</b> |
| PCS score *                     | 53.0±7.3          | 53.6±6.8          | 53.4±7.1          | 53.2±7.1          |
| Missing (%)                     | 8.6               | 4.8               | 1.9               | 0.9               |
| MCS score *                     | 49.7±8.8          | 50.6±8.3          | 50.9±8.3          | 52.2±8.1          |
| Missing (%)                     | 8.6               | 4.8               | 1.9               | 0.9               |
| <i>Time-constant covariates</i> |                   |                   |                   |                   |
| Gender                          |                   |                   |                   |                   |
| Female (%)                      | 54.7              |                   |                   |                   |
| Male (%)                        | 45.3              |                   |                   |                   |
| Missing (%)                     | 0.0               |                   |                   |                   |
| Age* (years)                    | 53.5±13.1         |                   |                   |                   |
| 30-64 years (%)                 | 80.2              |                   |                   |                   |
| ≥ 65 years (%)                  | 19.8              |                   |                   |                   |
| Missing (%)                     | 0.0               |                   |                   |                   |
| Education (years) *             | 10.1±4.7          |                   |                   |                   |
| Missing (%)                     | 1.6               |                   |                   |                   |
| <i>Time-varying covariates</i>  |                   |                   |                   |                   |
| Time (years)*,§                 | 0±0               | 2.1±0.3           | 1.9±0.9           | 2.9±0.5           |
| Marital status                  |                   |                   |                   |                   |
| Lived with a spouse (%)         | 84.7              | 88.4              | 86.5              | 86.2              |
| Lived alone (%)                 | 10.5              | 10.4              | 12.3              | 12.2              |
| Missing (%)                     | 4.8               | 1.2               | 1.3               | 1.6               |
| Tobacco smoking (yes)           |                   |                   |                   |                   |
| No (%)                          | 78.5              | 85.4              | 87.8              | 88.8              |
| Yes (%)                         | 17.2              | 13.9              | 11.3              | 10.9              |
| Missing (%)                     | 4.3               | 0.7               | 0.8               | 0.2               |
| Alcohol drinking (yes)          |                   |                   |                   |                   |
| No (%)                          | 83.4              | 89.9              | 93.3              | 94.3              |
| Yes (%)                         | 11.8              | 8.1               | 5.1               | 5.0               |
| Missing (%)                     | 4.8               | 2.0               | 1.6               | 0.7               |
| Betel-nut chewing (yes)         |                   |                   |                   |                   |

|                                      |         |         |         |         |
|--------------------------------------|---------|---------|---------|---------|
| No (%)                               | 92.5    | 97.3    | 97.8    | 98.7    |
| Yes (%)                              | 3.1     | 2.0     | 1.4     | 1.0     |
| Missing (%)                          | 4.5     | 0.8     | 0.8     | 0.3     |
| Psychiatric disorder                 |         |         |         |         |
| CHQ-12 < 4 (%)                       | 69.2    | 75.7    | 79.5    | 81.8    |
| CHQ-12 ≥ 4 (%)                       | 24.7    | 20.8    | 18.5    | 17.0    |
| Missing (%)                          | 6.1     | 3.5     | 2.0     | 1.2     |
| # of chronic diseases <sup>*,†</sup> | 1.6±1.4 | 1.7±1.5 | 2.0±1.5 | 2.0±1.5 |
| Missing (%)                          | 0.0     | 0.0     | 0.0     | 0.0     |
| # of Medications <sup>*,‡</sup>      | 0.1±0.4 | 0.1±0.3 | 0.1±0.4 | 0.1±0.4 |
| Missing (%)                          | 6.5     | 3.8     | 1.1     | 0.4     |
| Regular exercise status              |         |         |         |         |
| No exercise (%)                      | 34.6    | 34.2    | 37.8    | 36.6    |
| Ineffective exercise (%)             | 37.5    | 40.3    | 37.2    | 35.1    |
| < 150 minutes (%)                    | 9.7     | 9.6     | 9.5     | 9.5     |
| 150-299 minutes (%)                  | 5.4     | 5.7     | 6.7     | 8.1     |
| ≥ 300 minutes (%)                    | 6.6     | 6.7     | 7.2     | 10.2    |
| Missing (%)                          | 6.2     | 3.4     | 1.6     | 0.5     |

\*Mean±SD (standard deviation)

§Time interval between two adjacent waves

†Self-reported and/or diagnosed chronic diseases, including T2DM, hypertension, hyperlipidemia, kidney disease, cardiac disease, stroke, hepatic disease, gout, osteoporosis, asthma, psychiatric disease, nerve-related disease, intestinal disease, Tuberculosis, and metabolic syndrome

‡4 pills, including refreshing drugs, sleeping pills, sedative medicine, and painkiller

*Abbreviations:* HRQOL, health-related quality of life; PCS, physical component summary; MCS, mental component summary; CHQ-12, 12-item Chinese Health Questionnaire; T2DM, type 2 Diabetes mellitus