Appendix Figure: Adjusted odds ratios of developing severe psychological distress in three phases among workers: Mixed-model ordinal logistic regression results. Odds ratios were adjusted by gender, age, residential area, marital status, living arrangement, education, smoking status, alcohol consumption, walking time, comorbidities (hypertension, diabetes, heart disease, stroke, respiratory disease, kidney disease, cancer), regular vaccination and total K6 score at baseline. \*\* *P*<0.01, + *P*<0.1.

Appendix table 1. Individual factors associated with development of severe psychological distress: Multilevel mixed model logistic regression results

|  | OR | 95％CI | P |
| --- | --- | --- | --- |
| Gender | | | |
| Male | 1.00 |  |  |
| Female | 0.76 | (0.55–1.06) | 0.107 |
| Age | | | |
| 20–29 years | 2.07 | (1.02–4.18) | 0.043 |
| 30–39 years | 2.63 | (1.31–5.24) | 0.006 |
| 40–49 years | 2.63 | (1.34–5.16) | 0.005 |
| 50–59 years | 1.77 | (0.91–3.43) | 0.092 |
| 60–69 years | 1.29 | (0.68–2.41) | 0.444 |
| 70–79 years | 1.00 |  |  |
| Residential area | | | |
| Northern Kanto (Ibaraki, Tochigi, or Gumma Prefectures) | 1.04 | (0.62–1.74) | 0.882 |
| Saitama Prefecture | 1.25 | (0.83–1.89) | 0.280 |
| Chiba Prefecture | 1.21 | (0.78–1.86) | 0.401 |
| Tokyo Metropolitan | 1.00 |  |  |
| Kanagawa Prefecture | 1.26 | (0.87–1.83) | 0.228 |
| Working status | | | |
| No | 1.03 | (0.68–1.56) | 0.876 |
| Yes | 1.00 |  |  |
| Marital status | | | |
| Never married, divorced, or separated | 1.32 | (0.76–2.28) | 0.327 |
| Married | 1.00 |  |  |
| Living arrangement | | | |
| Living alone | 1.23 | (0.82–1.84) | 0.315 |
| Living with others but without children | 1.00 |  |  |
| Living with children aged ≥18 years | 0.89 | (0.53–1.49) | 0.658 |
| Living with children aged <18 years | 0.64 | (0.40–1.05) | 0.075 |
| Education (years) | | | |
| Junior or high school (≤12 years) | 1.02 | (0.71–1.46) | 0.919 |
| College (13–15 years) | 1.20 | (0.82–1.75) | 0.345 |
| University or higher (≥16 years) | 1.00 |  |  |
| Others | 0.29 | (0.07–1.20) | 0.087 |
| Smoking status |  |  |  |
| Current | 1.00 |  |  |
| Quit | 1.02 | (0.67–1.55) | 0.930 |
| Never | 1.13 | (0.73–1.77) | 0.582 |
| Drinking alcohol | | | |
| No | 1.00 |  |  |
| Seldom (1–4 days/week) | 0.98 | (0.71–1.35) | 0.905 |
| Often (5–7 days/week) | 0.98 | (0.65–1.47) | 0.906 |
| Walking time (min/day) | | | |
| <30 | 1.39 | (0.92–2.11) | 0.121 |
| 30–59 | 1.20 | (0.77–1.88) | 0.420 |
| 60- | 1.00 |  |  |
| Vaccinated regularly | | | |
| Yes | 1.00 |  |  |
| No | 1.26 | (0.85–1.87) | 0.246 |
| Annual income (Japanese Yen) | | | |
| < 2 million | 2.30 | (1.27–4.18) | 0.006 |
| 2 million-<4 million | 1.72 | (0.98–3.03) | 0.060 |
| 4 million-<6 million | 0.91 | (0.50–1.66) | 0.752 |
| 6 million- | 1.00 |  |  |
| Comorbidities | | | |
| Hypertension | 0.93 | (0.60–1.46) | 0.757 |
| Diabetes | 0.96 | (0.48–1.94) | 0.913 |
| Heart disease | 1.16 | (0.46–2.91) | 0.748 |
| Stroke | 1.26 | (0.27–5.94) | 0.774 |
| Respiratory disease | 2.55 | (1.44–4.51) | 0.001 |
| Kidney disease | 0.69 | (0.08–5.79) | 0.733 |
| Cancer | 0.43 | (0.13–1.43) | 0.171 |
| K6 score at baseline | 1.40 | (1.36–1.45) | <0.001 |

Appendix table 2: K6 score at baseline by follow-up status: attrition analysis result

| Age | N | Lost to follow up (*n* = 407) | | | | Completed all surveys (*n* = 1993) | | | | *P* for K6 score |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *n* | % | K6 score | | *n* | % | K6 score | |
| Mean | S.D | Mean | S.D |
| 20–29 | 400 | 132 | 33.0% | 6.69 | 6.29 | 268 | 67.0% | 6.44 | 5.79 | 0.916 |
| 30–39 | 400 | 55 | 13.8% | 6.50 | 6.40 | 345 | 86.3% | 5.40 | 6.08 | 0.309 |
| 40–49 | 400 | 48 | 12.0% | 5.29 | 5.25 | 352 | 88.0% | 5.04 | 4.99 | 0.749 |
| 50–59 | 400 | 58 | 14.5% | 4.23 | 4.76 | 342 | 85.5% | 5.43 | 5.48 | 0.122 |
| 60–69 | 400 | 45 | 11.3% | 3.41 | 4.01 | 355 | 88.8% | 5.47 | 6.05 | 0.013 |
| 70–79 | 400 | 69 | 17.3% | 2.99 | 3.70 | 331 | 82.8% | 3.41 | 3.99 | 0.538 |

*P*-value was calculated by Wilcoxon’s rank-sum test

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