**Supplementary material**

Table S1. Sensitivity analysis of the relationship between cognitive function and tooth replacement (all types) according to the number of natural teeth

|  |  |  |  |
| --- | --- | --- | --- |
| Category of natural teeth | B1 | SE | p value |
| 0-24 Natural teeth group |  |  |  |
| Pontics only | 0.19 | 0.21 | 0.363 |
| Pontics and implants | 0.02 | 0.22 | 0.921 |
| Implants only | 0.50 | 0.29 | 0.082 |
| 0-23 Natural teeth group |  |  |  |
| Pontics only | 0.25 | 0.22 | 0.257 |
| Pontics and implants | 0.04 | 0.23 | 0.867 |
| Implants only | 0.56 | 0.31 | 0.069 |
| 0-22 Natural teeth group |  |  |  |
| Pontics only | 0.26 | 0.23 | 0.248 |
| Pontics and implants | 0.14 | 0.25 | 0.575 |
| Implants only | 0.70 | 0.33 | 0.034 |
| 0-21 Natural teeth group |  |  |  |
| Pontics only | 0.17 | 0.23 | 0.470 |
| Pontics and implants | 0.17 | 0.26 | 0.513 |
| Implants only | 0.75 | 0.35 | 0.030 |
| 0-20 Natural teeth group |  |  |  |
| Pontics only | 0.32 | 0.25 | 0.200 |
| Pontics and implants | 0.24 | 0.27 | 0.365 |
| Implants only | 0.86 | 0.37 | 0.019 |
| 0-19 Natural teeth group |  |  |  |
| Pontics only | 0.31 | 0.26 | 0.229 |
| Pontics and implants | 0.20 | 0.29 | 0.494 |
| Implants only | 0.85 | 0.40 | 0.034 |
| 0-18 Natural teeth group |  |  |  |
| Pontics only | 0.24 | 0.27 | 0.369 |
| Pontics and implants | 0.11 | 0.30 | 0.715 |
| Implants only | 0.69 | 0.42 | 0.098 |
| 0-17 Natural teeth group |  |  |  |
| Pontics only | 0.23 | 0.28 | 0.414 |
| Pontics and implants | 0.15 | 0.31 | 0.628 |
| Implants only | 0.59 | 0.46 | 0.192 |
| 0-16 Natural teeth group |  |  |  |
| Pontics only | 0.22 | 0.29 | 0.452 |
| Pontics and implants | 0.12 | 0.33 | 0.727 |
| Implants only | 0.51 | 0.49 | 0.294 |
| 0-15 Natural teeth group |  |  |  |
| Pontics only | 0.14 | 0.30 | 0.653 |
| Pontics and implants | 0.06 | 0.35 | 0.871 |
| Implants only | 0.39 | 0.51 | 0.445 |

SE, standard error.

1 B, regression coefficient.

Table S2. Multiple linear regression analysis of the association between cognitive function and tooth replacement, excluding the pontic and implant group (n=843)

|  |  |  |  |
| --- | --- | --- | --- |
| Variable | B1 | SE | p value |
| Tooth replacement |  |  |  |
| None | Ref. |  |  |
| Pontic only | 0.43 | 0.27 | 0.120 |
| Implant only | 0.92 | 0.42 | 0.030 |
| Age | -0.12 | 0.03 | <.0001 |
| Sex |  |  |  |
| Male | Ref. |  |  |
| Female | -0.43 | 0.44 | 0.328 |
| Smoking status |  |  |  |
| Nonsmoker | Ref. |  |  |
| Former smoker | 0.99 | 0.39 | 0.012 |
| Current smoker | 0.34 | 0.48 | 0.482 |
| Alcohol consumption |  |  |  |
| None | Ref. |  |  |
| ≤1/week | -0.02 | 0.33 | 0.948 |
| >1/week | -0.08 | 0.28 | 0.773 |
| Body mass index (kg/m2) |  |  |  |
| Normal (<23) | Ref. |  |  |
| Overweight (23-24.9) | 0.58 | 0.29 | 0.044 |
| Obese (≥25) | 0.66 | 0.27 | 0.016 |
| Hypertension |  |  |  |
| No | Ref. |  |  |
| Yes | 0.23 | 0.23 | 0.333 |
| Cerebrovascular disease |  |  |  |
| No | Ref. |  |  |
| Yes | 0.15 | 0.47 | 0.742 |
| Coronary artery disease |  |  |  |
| No | Ref. |  |  |
| Yes | 0.49 | 0.37 | 0.194 |
| Asthma or COPD |  |  |  |
| No | Ref. |  |  |
| Yes | -0.42 | 1.08 | 0.696 |
| Osteoporosis |  |  |  |
| No | Ref. |  |  |
| Yes | 0.25 | 0.30 | 0.399 |
| Diabetes mellitus |  |  |  |
| No | Ref. |  |  |
| Yes | 0.17 | 0.27 | 0.535 |
| Depression |  |  |  |
| No | Ref. |  |  |
| Yes | -0.23 | 0.65 | 0.722 |
| Other psychotic disorder |  |  |  |
| No | Ref. |  |  |
| Yes | 0.18 | 0.66 | 0.782 |
| hs-CRP (mg/L) |  |  |  |
| <1.0 | Ref. |  |  |
| 1.0-3.0 | 0.29 | 0.25 | 0.235 |
| >3.0 | 0.12 | 0.35 | 0.725 |
| Number of natural teeth | 0.00 | 0.02 | 0.927 |
| Periodontitis |  |  |  |
| Normal | Ref. |  |  |
| Mild | -0.97 | 0.55 | 0.077 |
| Moderate | -0.67 | 0.46 | 0.145 |
| Severe | -0.82 | 0.46 | 0.076 |
| Edentulous | -0.85 | 0.50 | 0.094 |
| Chewing discomfort |  |  |  |
| Not at all | Ref. |  |  |
| Mild discomfort | 0.47 | 0.34 | 0.162 |
| Moderate discomfort | 0.27 | 0.28 | 0.333 |
| Severe discomfort | -0.07 | 0.33 | 0.837 |
| Tooth-brushing frequency |  |  |  |
| 0-1 time/day | Ref. |  |  |
| 2 times/day | 0.49 | 0.32 | 0.126 |
| ≥3 times/day | 0.65 | 0.33 | 0.047 |
| Education level |  |  |  |
| Uneducated | Ref. |  |  |
| Primary school | 2.22 | 0.30 | <.0001 |
| Middle school | 3.04 | 0.38 | <.0001 |
| High school or higher | 3.63 | 0.37 | <.0001 |
| Monthly household income (in 104 KRW) |  |  |  |
| ≥300 | Ref. |  |  |
| 100-300 | -0.46 | 0.44 | 0.299 |
| <100 | -0.75 | 0.46 | 0.098 |
| Economic activity participation |  |  |  |
| No | Ref. |  |  |
| Yes | -0.28 | 0.25 | 0.260 |
| Living alone |  |  |  |
| No | Ref. |  |  |
| Yes | 0.32 | 0.37 | 0.394 |
| Marital status |  |  |  |
| Married | Ref. |  |  |
| Widowed/separated/divorced/never married | 0.46 | 0.38 | 0.227 |

SD, standard deviation; SE, standard error; COPD, chronic obstructive pulmonary disease; hs-CRP, high-sensitivity C-reactive protein.

1 B, regression coefficient