**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