LETTER TO THE EDITOR

Number of teeth and medical care expenditure

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Studies have shown that poor dental health is associated with general health conditions. For example, tooth loss is associated with an increased risk of cardiovascular disease[1)], dementia[2)], dependence in activities of daily living[3)], and premature death[3)]. However, little is known about the association between the number of teeth and medical care expenditure.

We conducted a cross-sectional study of patients aged 50-79 years with a diagnosis of chronic periodontitis (ICD-10 code: K051) in April 2013 using the National Database of Health Insurance Claim Information and Specified Medical Checkups (NDB). The Japanese government developed the NDB that includes almost all claims for medical and dental care in Japan[4)] , a country with a population of 127 million. We identified 327,689, 610,087, and 654,410 eligible patients in their 50s, 60s, and 70s, respectively. For each patient with chronic periodontitis, we identified the number of teeth by using dental care claims and summed up medical care expenditure by using medical care claims in the same month. We calculated median medical expenditure stratified by the number of teeth ranging from 1–28 and age groups (50–59, 60–69, and 70–79 years) (Figure).

To describe associations between number of teeth (independent variable) and medical expenditure (primary outcome) while controlling for sex, we also constructed generalized linear models with a gamma distribution and log-link function by using maximum likelihood estimation. As the likelihood ratio test for interaction between age groups and number of teeth was statistically significant ($p<.001$), the models were constructed by age group. The models showed that medical care expenditure increased by 2.4% per each tooth lost in patients in their 50s (multiplicative effect, 0.98; 95% confidence interval [CI], 0.97-0.98). The association became attenuated in patients in their 60s (multiplicative effect, 0.98; 95% CI, 0.98–0.99) and in those in their 70s (multiplicative effect, 0.99; 95%

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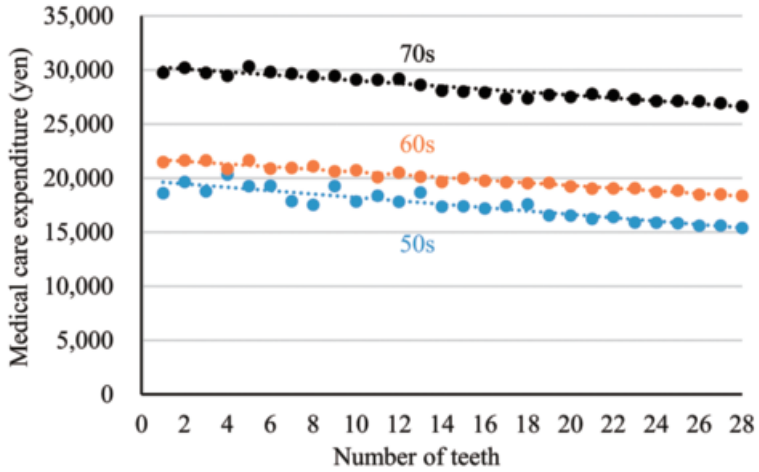

Fig　Median medical care expenditure for different numbers of teeth in subjects aged 50-59, 60-69, and 70-79.

CI, 0.99–0.99).

Patients with more teeth spent less on medical care. Periodontitis and dental caries are major causes of tooth loss[5]. These diseases are associated with socio-economic status, smoking, and access to health-care services, all of which are also associated with non-communicable diseases. Dental caries and periodontitis develop earlier than non-communicable diseases. Tooth loss may be a summative measure of physical, psychological, and social stress. Sharing information about number of teeth with both medical and dental care providers and patients may provide a valuable impetus for improving cooperation in dental and medical health-care.

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Ethics committee approval : The protocol of this study was reviewed and approved by the Ethics Committee at Tokyo Dental College (No. 557).

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