

# The Association of Periodontal Disease and Osteoporosis: A Nationwide Population-Based Study

Pei-Chieh Ko<sup>1</sup>; Yung-Po Liaw<sup>1</sup>; Jing-Yang Huang<sup>1</sup>; Hsun-Pi Su<sup>2</sup>; Hsiao-Pei Tu<sup>2</sup>;  
Shiou-Rung Jan<sup>1</sup>; Chin-Shun Chang<sup>3</sup>; Tzu-Hsien Lin<sup>2</sup>

<sup>1</sup> *Department of Public Health, Chung Shan Medical University, Taichung, Taiwan.*

<sup>2</sup> *Department of Dental Hygiene, China Medical University, Taichung, Taiwan.*

<sup>3</sup> *Taiwan Society of Oral Health, Keelung, Taiwan.*

## Abstract

**Objective:** The aim of this study is to investigate the association between periodontal disease and osteoporosis by using a nationwide population database.

**Methods:** We used a 2,000,000 Longitudinal Health Insurance database provided from National Health Research Institutes. In our study, the osteoporosis patients were diagnosed with ICD-9-CM code (523.3, 523.4, 523.5) and 9,305 periodontal disease patients who had treatment for subgingival curettage, periodontal flap operation or gingivectomy in 2005 were included in the study. Multiple logistic regression was used to analyze the association between periodontal disease and osteoporosis, and the model was adjusted for age, gender, insurance amount, and region.

**Results:** The prevalence of osteoporosis in patients with periodontal disease was higher than that in the general population in 2005. After adjusted the covariates, patients with periodontal disease had a higher risk with osteoporosis (OR=2.03; 95% C.I., 1.29-3.20); among women, we also found that a significantly high risk (OR=1.96; 95% C.I., 1.17-3.26).

**Conclusions:** In our study resulted from the nationwide population, a statistically significant relationship was found between periodontal disease and osteoporosis after adjusting the covariates of age, gender, insurance amount, and region.

**Keywords:** Periodontal disease, Osteoporosis, National Health Insurance