



## Letter to the editor

# Therapeutic potentials of oral health instructions in periodontitis patients with diabetes mellitus: Glycemic control and beyond



Dear Editor,

We read with interest an article in Journal of Dental Sciences, which highlights the beneficial effects of oral health instructions (OHI) in periodontitis patients with diabetes mellitus (DM).<sup>1</sup> Periodontitis patients are associated with increased risks of DM and coronary artery disease (CAD).<sup>2</sup> However, whether DM increases the risk of CAD in periodontitis patients remains un-studied. With institutional review board approval (TMU-JIRB: N201907056), we analysed anonymized claim data among

randomly sampled one million people from Taiwan National Health Insurance Research Database. A cohort of periodontitis patients with DM (P/DM cohort,  $n = 7530$ ) and an age-, gender-matched comparison cohort (namely periodontitis patients without DM,  $n = 7530$ ) were included. Periodontitis, DM, CAD events (percutaneous coronary intervention or coronary artery bypass grafting), and all confounders were identified by the ICD-9-CM codes. During 1- to 14-year follow-up, our data revealed a higher incidence of CAD events in the P/DM cohort than in the comparison cohort (21.1% vs. 12.0%,  $p < 0.001$ ). The relative risk of having CAD events in the P/DM cohort was higher than in the comparison cohort (odds ratio [OR]:1.92,  $p < 0.001$ ; Table 1). The trend remained the same after adjusting for the possible confounders (OR:1.43; Table 1) and the propensity score (OR:1.50; Table 1). These data demonstrate that DM may increase the risk of CAD in periodontitis patients. It is established that glycemic control is essential for preventing CAD events in DM patients.<sup>3</sup> As OHI improves glycemic control,<sup>1</sup> we thus conjecture that OHI may exert beneficial effects against CAD in periodontitis patients with DM.

**Table 1** The relative risk of having coronary artery events in periodontitis patients with diabetes mellitus (DM) comparing to periodontitis patients without DM.

Variables	Odd's ratio	95% Confidence intervals	<i>P</i> value <sup>a</sup>
DM (Yes)	1.92	1.77–2.08	<0.001
DM (No)	1.00		
DM (Yes) <sup>b</sup>	1.43	1.31–1.56	<0.001
DM (No)	1.00		
DM (Yes) <sup>c</sup>	1.50	1.37–1.65	<0.001
DM (No)	1.00		

Coronary artery events include percutaneous coronary intervention and/or coronary artery bypass grafting.

<sup>a</sup> Tested by Cox proportional hazard regression.

<sup>b</sup> Adjusted for confounders that were significantly different between periodontitis patients with and without DM; including hypertension, hyperlipidemia, alcohol-related illness, obesity, chronic obstructive pulmonary disease (as a proxy of smoking), depression, anxiety, use of anti-depressants, use of non-steroid anti-inflammatory drugs, use of opioids, use of cardiovascular drugs, and cardiology visits.

<sup>c</sup> Adjusted for propensity score.

## Declaration of Competing Interest

The authors have declared that no competing interests exist.

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Taiwan and managed by Taiwan's National Health Research Institutes. The interpretation and conclusions contained herein do not represent those of Taiwan's Bureau of National Health Insurance, Department of Health or National Health Research Institutes.

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