

LETTER TO THE EDITOR

Oral health as an opportunity to support isolated people with dementia: useful information during coronavirus disease 2019 pandemic

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Dear Editor,

We would like to deliver two unpublished findings that we believe offer useful information in the fight against coronavirus disease 2019 (COVID-19), especially for specialists who support people with dementia.

Recent research has revealed an association between oral health and the lethal pneumonia caused by COVID-19. First, the presence of chronic inflammation in the oral cavity is associated with increased susceptibility to COVID-19 infection.¹ Second, in acute pneumonia due to COVID-19 and bacterial pneumonia due to aspiration of oral bacteria, septic shock and thrombus formation can lead to a higher fatality rate when combined with decreased cellular immune function and a cytokine storm.²

It is well known that the risk for severe illness from COVID-19 increases with age, with older adults at

the highest risk. Accordingly, oral health is a critical issue for the older people during the COVID-19 pandemic. However, oral health research on community-dwelling elderly individuals with dementia is sparse. Additionally, in overpopulated urban areas, the dental care needs of people with dementia are reportedly difficult to ascertain.³

To explore the real-world oral health of older people with dementia, we have launched two research frameworks.

First, for an epidemiological survey, we offered a new option: home visits by the research team.⁴ This approach increased opportunities for community-dwelling older people, especially those who tend to be socially withdrawn and would normally be overlooked, to participate in the epidemiological survey. The results of this survey indicated that participants who had asked to complete a home-visit survey had

Table 1 Preliminary results of the 2019–2020 home-visit oral health survey

	CDR 2–3 (n = 8)		CDR 0–1 (n = 37)		P-value [†]
	Mean (median)	Range	Mean (median)	Range	
Age (years)	81.8 (81.0)	79.0–85.0	84.2 (84.0)	77.0–98.0	0.258
DASC-21	61.8 (62.0)	46.0–79.0	27.2 (25.0)	21.0–61.0	<0.001
MMSE-J	12.3 (12.5)	7.0–18.0	22.3 (23.0)	14.0–28.0	<0.001
MNA	21.3 (21.3)	14.5–27.5	25.1 (26.0)	18.0–29.5	0.017
BMI (kg/m ²)	22.4 (21.9)	19.2–27.3	22.7 (22.1)	16.2–29.9	0.767
Periodontal teeth (n)	19.3 (21.5)	0.0–27.0	15.1 (16.0)	0.0–27.0	0.184
Functional teeth (n)	24.9 (27.0)	14.0–29.0	26.3 (27.0)	14.0–29.0	0.842
PESA (mm ²)	1003.9 (1213.4)	0.0–1486.2	589.6 (617.1)	0.0–1269.6	0.030
PISA (mm ²)	458.2 (438.2)	0.0–1254.0	123.7 (86.4)	0.0–751.8	0.043
PESA/no. of teeth (mm ² /tooth)	51.8 (54.7)	28.5–70.8	39.5 (38.9)	3.7–79.6	0.082
PISA/no. of teeth (mm ² /tooth)	23.5 (20.1)	1.7–59.7	7.8 (5.9)	0.0–29.7	0.021
ROAG	11.8 (12.0)	10.0–15.0	11.0 (11.0)	8.0–15.0	0.357
RSST (/30 s)	2.7 (3.0)	1.0–5.0	3.7 (4.0)	0.0–6.0	0.042
ODK/pa/ (times/s)	4.4 (4.4)	2.4–5.4	5.4 (5.4)	2.8–7.4	0.019
ODK/ta/ (times/s)	4.7 (4.7)	4.0–5.8	5.9 (6.0)	3.2–8.0	0.002
ODK/ka/ (times/s)	3.9 (3.9)	3.0–4.8	5.6 (5.6)	2.8–7.2	<0.001

[†]Kruskal–Wallis test. CDR, Clinical Dementia Rating; DASC-21, 21-item Dementia Assessment Sheet in Community-based Integrated Care System; MMSE-J, Mini-Mental State Examination, Japanese version; MNA, Mini-Nutritional Assessment; BMI, body mass index; periodontal teeth, remaining teeth (includes severely decayed teeth); functional teeth, natural teeth and artificial teeth on fixed and removable prostheses; PESA, periodontal epithelial surface area; PISA, periodontal inflamed surface area; ROAG, Revised Oral Assessment Guide; RSST, Repetitive Saliva Swallowing Test; ODK, oral diadochokinesis.

worse oral health and had visited a dentist less frequently than those who had asked to complete a conventional survey.

Second, in a clinical survey, we formed a team with multiple dentists and one psychiatrist to revisit the older people with cognitive impairment who were found in the epidemiological survey as being at high risk for daily life disorders. At participants' homes, the psychiatrist evaluated their Clinical Dementia Rating, and the dentists examined their oral function, including the periodontal inflamed surface area (PISA). PISA is a method of quantifying the inflammatory burden of periodontal disease. The larger an individual's PISA is, the greater the bacteraemia, systemic inflammatory response, and cross-reactivity caused by periodontal disease.⁵

Table 1 shows the clinical survey results up to the time just before COVID-19 interrupted these visits. The results indicated that PISA was significantly larger in individuals with cognitive decline than in those with normal cognition, meaning that individuals with cognitive decline are unknowingly living with chronic inflammation in their oral cavity (Table 1). Additionally, individuals with cognitive decline with poor oral health had worse nutritional status because of neglected oral defects. Also, people with cognitive decline had objective oral health deterioration as assessed by dentists, but they were not receiving primary dental care.




Our findings indicate that homebound elderly people with dementia are at risk of pneumonia via poor oral health during the COVID-19 pandemic. Accordingly, intervention targeting the oral health of community-dwelling older people might be an effective protective measure against COVID-19. In conclusion, collaborations between geriatric psychiatrists and dentists have great value.

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AUTHOR CONTRIBUTIONS

All authors contributed to the development of the study concept and design, the acquisition of subjects and/or data, analysis and interpretation of data, and manuscript preparation. All authors agree to be held accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Ayako Edahiro ¹, Tsuyoshi Okamura ¹, Yoshiko Motohashi,¹ Chika Takahashi,¹ Mika Sugiyama,¹ Fumiko Miyamae,¹ Tsutomu Taga,¹ Chiaki Ura,¹ Riko Nakayama,² Mari Yamashita³ and Shuichi Awata ¹
Research Team ¹for Promoting Independence and Mental Health and ³for Social Participation and Community Health, Tokyo Metropolitan Institute of Gerontology and ²Department of Integrated Education and Science, Graduate School of Education, The University of Tokyo, Tokyo, Japan

Correspondence: Dr Ayako Edahiro DDS PhD, Research Team for Promoting Independence and Mental Health, Tokyo Metropolitan Institute of Gerontology, Japan, 35-2 Sakae-cho, Itabashi-ku, Tokyo, 173-0015, Japan. Email: aedahiro514@gmail.com

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