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Can dental caries be an independent predictor of sarcopenia and its diagnostic factors?

Name: Shankuan Zhu

Affiliation: Qiushi Professor at Zhejiang University

Country: China

Email ID: zsk@zju.edu.cn

ABSTRACT

Background:

Epidemiological studies have revealed the association of oral diseases with sarcopenia or its diagnostic factors (low muscle strength, low muscle mass and reduced physical performance). However, it remains unclear whether dental caries is an independent predictor of sarcopenia or one of its diagnostic factors. Hence the aim of this study was to investigate the associations of dental caries with sarcopenia and its diagnostic factors.

Method:

This cross-sectional study included a total of 1,961 participants aged 18-80. The Decayed, Missing, and Filled teeth (DMFT) index was used for assessing severe dental caries. The independent variables related to dental caries include DMFT index, severe dental caries and tooth loss caused by caries. Severe dental caries was defined as DMFT index over 8. Low muscle strength was assessed by hand grip force. Low muscle mass was assessed by dual-energy X-ray absorptiometry (DXA) scan. Sarcopenia was defined as the presence of both low muscle mass and low muscle strength. Multivariate logistic regression models was used to analyse the associations of dental caries with sarcopenia and its diagnostic factors.

Results:

In the fully adjusted models, dental caries was positively associated with sarcopenia (DMFT index: P-value=0.001; severe dental caries: odds ratio[OR], 1.67; 95% confidence interval [CI], 1.13-2.46; tooth loss: P-value=0.002), low muscle

strength (DMFT index: P-value<0.001; severe dental caries: OR, 1.66; 95% CI, 1.29-2.13; tooth loss: P-value<0.001), and reduced physical performance (DMFT index: P-value=0.001; severe dental caries: OR, 1.71; 95% CI, 1.17-2.48; tooth loss: P-value=0.001). Dental caries related variables were not related to low muscle mass in all models. The relationship of dental caries and sarcopenia was more pronounced in the male group.

Conclusions:

Dental caries can be an independent predictor of sarcopenia and its diagnostic factors except low muscle mass. This association remained in male subgroup and partly remained in female subgroup.



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BIOGRAPHY

Dr. Zhu is a Qiushi Professor at Zhejiang University, CMB Distinguished Professor, a Professor at Children's Hospital of Zhejiang University School of Medicine, and a Professor at the University of Toronto (Status Only), the Founding Director of Chronic Disease Research Institute, and the Chair of Department of Nutrition and Food Hygiene at Zhejiang University School of Public Health, the Founding Director of Obesity and Body Composition Research Center at Zhejiang University School of Medicine. Dr. Zhu served as Executive Dean and Vice Dean of Zhejiang University School of Public Health from 2009 to 2017.

Dr. Zhu graduated from Nagoya University School of Medicine, Japan, and obtained PhD in 1997, was an Assistant Professor at Nagoya University from 1997 to 2000. From 2000 to 2003, he received Post-doctoral training at Obesity Research Center, Human Nutrition Institute at Columbia University College of Physicians and Surgeons. He joined the faculty as an Assistant Professor (tenure-track) from 2003 to 2007 at Medical College of Wisconsin and Adjunct Associate Professor from 2008 to 2010. Dr. Zhu received US CMB Distinguished Professorship Award in 2009, University Silver Medal from Heidelberg University in 2012, and the Most Cited Chinese Researchers in Medicine (Elsevier) in 2014 to 2020.

Presenter Name: Yang Yang.
Mode of Presentation: Oral.
Contact number: +15812268368

