

Associations between adherence to the Eatwell Guide and risk of self-reported periodontal disease: An analysis of the UK Biobank prospective cohort study

S. Alhulaefi^{1,2}, A. Watson¹, S. Gregory^{3,4}, SE Ramsay⁵, J. Matu⁶, FC Malcomson¹, R. Townsend^{1,7}, A. Fairley^{1,7}, A. Jennings⁸, NA Ward⁸, A. Griffiths⁶ and OM Shannon¹

Abstract

Cite this article: Alhulaefi S, Watson A, Gregory S, Ramsay SE, Matu J, Malcomson FC, Townsend R, Fairley A, Jennings A, Ward NA, Griffiths A, and Shannon OM (2025). Associations between adherence to the Eatwell Guide and risk of self-reported periodontal disease: An analysis of the UK Biobank prospective cohort study. *Proceedings of the Nutrition Society* **84**(OCE3): E210. doi: [10.1017/S0029665125100797](https://doi.org/10.1017/S0029665125100797)

¹Human Nutrition & Exercise Research Centre, Centre for Healthier Lives, Population Health Sciences Institute, Newcastle University, Newcastle upon Tyne, UK; ²Department of Nutrition, Faculty of Science, Taif University, P.O. Box 11099, Taif 21944, Saudi Arabia; ³Edinburgh Dementia Prevention, Centre for Clinical Brain Sciences, University of Edinburgh, Edinburgh, UK; ⁴Scottish Brain Sciences, Edinburgh, UK; ⁵Population Health Sciences Institute, Newcastle University, UK; ⁶School of Health, Leeds Beckett University, Leeds, UK; ⁷School of Biomedical, Nutritional and Sport Sciences, Newcastle University, Newcastle upon Tyne, UK and ⁸Centre for Public Health, Queens University Belfast, Belfast, UK

Periodontal disease has significant negative effects on the health and lives of people worldwide, including chronic pain, eating difficulties, social anxiety, economic costs of treatment, and lost productivity ⁽¹⁾. Diet is an influential factor in managing periodontal disease ⁽²⁾. However, it is currently unclear whether following UK healthy eating recommendations outlined in the Eatwell Guide (EWG), which is a reference used in public health initiatives and clinical practice in the UK ⁽³⁾, is associated with risk of periodontal disease. To address this knowledge gap, this study examined cross-sectional and prospective associations between adherence to the EWG and the risk of periodontal disease.

This study was conducted using data from the UK Biobank prospective cohort study. EWG adherence scores were created using dietary data from 24-hour dietary questionnaires (Oxford WebQ). Participants were awarded points between 0–5 reflecting the extent to which they adhered to each of the 12 healthy eating recommendations outlined in the EWG (total score range: 0–60). Periodontal disease risk markers were assessed using self-reported oral health questionnaires. Logistic regression models were used to examine cross-sectional associations between levels of EWG adherence (low, medium and high) and odds of periodontal disease. Generalised estimating equations were used to analyse prospective associations. Analyses were adjusted for relevant covariates.

Cross-sectional analyses involving 158,899 participants showed significant associations between higher (odds ratio (OR) [95% Confidence Interval (CI)]: 0.876 [0.848–0.906]) and moderate (OR [95% CI]: 0.958 [0.927–0.989]) adherence to the EWG and lower odds of periodontal disease versus the low-adherence reference group. These results were consistent with prospective analyses (higher adherence: OR [95% CI]: 0.861 [0.834–0.888]; moderate adherence: 0.943 [0.914–0.973]). Results were robust to a range of sensitivity analyses.

Following UK-specific healthy eating recommendations, as outlined in the Eatwell Guide, could help lower the risk of periodontal disease. These findings warrant substantiation in future randomised controlled trials.

References

1. Botelho J, Machado V, Leira Y, Proença L, Chambrone L, Mendes JJ. *J Periodontol*. 2022 Mar 9;93(3):373–9.
2. Watson S, Woodside J V., Winning L, Wright DM, Srinivasan M, McKenna G. *J Clin Periodontol*. 2022 May;49(5):428–38.
3. Public Health England. 2016.