

What's new for the clinician– summaries of recently published papers

SADJ August 2022, Vol. 77 No.7 p435 - p438

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1. The relationship between general health and lifestyle factors and oral health outcomes

There is substantial published literature describing the relationship between systemic health and oral, particularly periodontal health¹. To list a few, periodontal diseases have been linked to cardiovascular diseases, high blood pressure, stroke, diabetes, dementia, respiratory diseases, and mortality, where an inflammatory pathway was depicted.¹ Another line of research has examined the association between the number of teeth, severe dental caries, and general health among older adults and children, suggesting a nutritional pathway.¹

In the United Kingdom (UK), DEPPA, the Denplan PreViser Patient Assessment, is used an online tool that assesses patients' risk of developing future oral disease and their current oral health status is recorded using the composite 'Oral Health Score' (OHS). Online questionnaires are completed by patient and practitioner using data collected in a routine examination.

Traffic light coloured, personalised reports are instantly generated using PreViser's evidence-based algorithm. Such measures offer potentially valuable signposts for patient engagement, education and motivation towards behaviour change. Standard clinical practice commonly employs separate measurements for each aspect of oral health, however, validated composite measurements are valuable in providing patients with a holistic summary of their oral health outcomes and facilitate oral health improvement targets.

Sharma and colleagues (2016)¹ reported on a study that sought to report on the association between current oral health status of patients, as measured using the OHS, and patient-reported risk factors and general health in the preceding year. The primary research question addressed in this paper was 'are lower than average oral health scores observed for those patients who report problems with general health and high-risk lifestyle factors?'

METHODS AND MATERIALS:

Data from the first 37,330 patients to receive a DEPPA at their dental practice was analysed. A total of 493 different dentists contributed patient assessments to this population.

The oral health score (OHS) is generated based upon patient-reported domains such as oral pain, function (eating), appearance, fluoride exposure, etc and a clinical dental examination. These scores are recorded online in DEPPA and are then used by the embedded algorithms to produce the composite OHS for each patient based upon their current oral health status. These scores are out of a maximum of 100 which equates to perfect oral health and lower scores indicate worse oral health status.

The remaining general health and lifestyle questions relate to questions on smoking and alcohol consumption, presence of diabetes, oral cancer, etc.

The data submitted by practices during a DEPPA are held centrally in an encrypted and de-personalised form so that only the submitting practice can identify individual patients. The DEPPA database was interrogated to report the OHS for each patient as well as lifestyle factors including diabetes, tobacco use, alcohol consumption and any major health problems in the preceding year as a surrogate for the overall general health of patients.

The association between the self-reported general health and OHS of patients within the DEPPA database was reported unadjusted and adjusted for the following covariates: age; self-reported diabetes status (yes or no); tobacco use (ever smoked cigarettes, cigars or pipe or used smokeless tobacco); alcohol status (none, <1 drink/day, 1 drink/day, 2 drinks/day, 3 or more drinks/day); presence of acid reflux (yes or no); and conditions causing vomiting at least once a week (yes or no). Also included as covariates were dental assessments of inadequate saliva flow (yes or no) and dental attendance (less than recommended or as recommended). These covariates were included as they could possibly confound the association between general health and OHS by influencing both.

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RESULTS

All 37,330 patients in the DEPPA database at the census point for data extraction were included in the analysis. The mean age of participants was 54 years (range 17–101; S.D. 16 years) and the mean OHS for the group was 78.4 (range 0–100; S.D. 10). A total of 1,255 (3%) of patients reported experiencing a major health problem in the last year, 1,875 (5%) reported having diabetes, 22,925 (61%) reported no tobacco use ever, 7,723 (21%) reported no alcohol intake, 345 (1%) reported a health condition that predisposes to vomiting at least once a week and 4,463 (12%) reported acid reflux into the mouth. The dentists assessed inadequate saliva flow in 608 (2%) patients and less than recommended dental attendance in 2,213 (6%) of patients.

Patients who self-reported to have experienced a major health problem within the previous year ($N = 1,255$) were significantly older and had a lower OHS than patients who did not report experiencing a major health problem in the last year. Such patients were also more likely to have diabetes, use tobacco, be teetotal, experience reflux or vomiting, have inadequate saliva flow and be infrequent attenders to their dentist.

A multivariable analysis undertaken demonstrated that, accounting for all other covariates mentioned, having diabetes was associated with a 1.7 point drop in OHS compared to no diabetes, tobacco use was associated with a 2.7 point drop in OHS compared with no tobacco use, excessive alcohol consumption (three or more glasses) was associated with a 1.8 point drop in OHS compared with no alcohol consumption and less than recommended dental attendance was associated with a 7.3 point drop in OHS compared with recommended dental attendance. The OHS also decreased in a dose-dependent manner with age with each increase in decade being associated with a 2-point drop in OHS.

In the fully adjusted model, patients who reported major health problems in the last year had a mean OHS that was 3.5 points, 0.7 points (95% CI 0.2–1.2, $P = 0.006$) lower than those that did not report such problems.

CONCLUSIONS

The current study has demonstrated that patient reported general health and risk factors were negatively associated with an overall composite oral health score outcomes.

Implications for practice: While the clinical significance of some of the reported associations was unknown, the data lends support to the growing body of evidence linking the oral and systemic health of individuals. Therefore, oral health professionals may be in a unique position to influence the lifestyle and general health of patients as part of their specific remit to attain and maintain optimal oral health.

REFERENCE

1. Sharma P, Busby M, Chapple L, Matthews R, Chapple I. The relationship between general health and lifestyle factors and oral health outcomes. *British dental journal*. 2016; 221: :65-9.

2. Gluten-free foods: a 'health halo' too far for oral health?

Gluten is a family of proteins found in wheat, barley, rye and spelt. Its name comes from the Latin word for "glue," as it gives flour a sticky consistency when mixed with water. This glue-like property helps gluten create a sticky network that gives bread the ability to rise when baked. It also gives bread a chewy and satisfying texture. Unfortunately, many people feel uncomfortable after eating foods that contain gluten. The most severe reaction is called celiac disease.

The modern trend for a healthier lifestyle, the desire to lose weight and eating healthier foods has resulted in a number of lifestyle trends, one of which is the adoption of a "gluten-free" diet. Supermarkets, and many food outlets have pandered to this trend and many of them have Gluten-free isles where a variety of gluten-free foods are available.

Some researchers have described a 'health halo' effect related to health foods. They defined the term as the presence of a health claim which induces the consumer to rate the product higher on other attributes not mentioned in the claim. For example, 'low fat' being regarded as healthy even if the product is low in fibre and high in sugar. The sugar content in these foods is of major interest to oral health professionals as sugar consumption is a well-known risk factor for dental caries. Also, an increase in sugar consumption can have a detrimental effect on general health, leading to weight gain and consequently, an increased risk of heart disease, type II diabetes mellitus, obesity and stroke.

Rothburn and colleagues (2022)¹ reported on a study that sought to assess the sugar and energy content of Gluten-free (GF) food from the perspective of those consumers who are not suffering from clinical gluten sensitivity (for example, coeliac disease) or non-coeliac gluten sensitivity on oral and general health.

MATERIALS AND METHODS

This was a UK based study. The methodology comprised a content analysis of food packaging for a purposively selected range of gluten-free products and their gluten-containing versions. Food products were sourced from all the major UK supermarkets with an online presence, that is, Tesco, Asda, Lidl, Sainsbury's, Morrisons and Waitrose.. Where possible, pairings or comparisons were made from the same own brand or branded product, for example, Warburton's GF and gluten-containing white bread. All of the selected foods were either cereal or cereal products, which corresponded with the NHS 'foods containing gluten unsafe to eat for coeliac disease sufferers' list. The National Diet and Nutrition Survey (NDNS) cereal and cereal products food group sub-categories were used to classify the selected food items for data collation and analysis. Further classification was by product description, for example: Category 1: 'ready meal'; Category 2: pasta, rice, pizza and other miscellaneous cereals and Category 3: 'korma and rice'.

The nutritional information on the front and back of package labels was collated using Microsoft Excel. This

culminated in the data variables in terms of product and nutritional attributes reviewed.

The use of emotive marketing language in the product packaging was also assessed. Also, front of pack (FOP) labelling indicating which products were green (low), amber (medium) or red (high) with regard to total sugars (including, for example, sucrose, fructose, glucose, maltose, lactose) was recorded.

RESULTS

In total, 15 Gluten-free (GF) products and their gluten-containing versions, available to UK consumers, were purposively selected for this study.

The main GF food products surveyed were 'baked goods', accounting for 76% (19/25), with 'buns, cakes and pastries' predominating this National Diet and Nutrition Survey (NDNS) food category (7 out of 19, 36.8%), followed by 'biscuits' (5 out of 19, 26.3%). Four ready meals and two breakfast cereal pairings were also studied.

Gluten-containing product pack sizes ranged from 96 g (shortbread fingers) to 1,000 g (vanilla cheesecake, ten portions). For GF products, sizes ranged from 90 g (two cupcakes) to 570 g (vanilla cheesecake, six portions). This indicated a need to compare products per 100 g for a direct nutritional comparison.

The largest size differences in portion sizes were for the ready-to-eat meals. The three GF ready meals (lasagne, macaroni cheese and korma) were 120-181 g smaller than the gluten-containing pairing. Portion sizes for bread were also consistently smaller for the GF products, ranging from 10-26 g smaller per pairing.

A consumer purchasing all 25 items containing gluten would have spent £52.28 at the time of the research, while those purchasing the GF alternatives would have spent £7.19 more, that is, £59.47. For high-sugar products, such as buns, cakes, pastries and puddings, the GF alternatives were cheaper, whereas GF staple items, like bread and pasta, were more expensive when compared with the gluten-containing pairings. A comparison of cost (in £ sterling) per 100 g highlighted that all GF product categories were considerably higher.

On average, the GF products contained more calories, carbohydrates and sugar than the gluten-containing products. GF foods contained 7% more sugar on average than gluten-containing foods. For GF products, the sugar content ranged from 2.4 g/100 g for Amy's Kitchen macaroni and cheese to 49.0 g/100 g for Tesco's chocolate wafers. Whereas the range for gluten-containing products was from 1.2 g/100 g for the Sainsbury's macaroni and cheese to 46.2 g/100 g for Tesco's chocolate wafers.

The total energy content for gluten-containing products was 310 kcal versus 321 kcal for GF products. The largest difference in energy kcal per 100 g was for wholemeal

bread 221 kcal/100 g in gluten-containing versus 256 kcal/100 g in GF wholemeal bread.

Overall, the GF products contained 1.3 times more sugar than their gluten-containing counterparts (18 g:14 g). Only two gluten-containing products (white bread and pizza) contained more sugar out of the 50 products analysed. The greatest difference in sugar content per 100 g was the puddings category (23 g in the gluten containing versus 32 g in the GF versions)

The average portion size was determined by the manufacturer's information clearly stated on the packaging of the products. GF products contained more sugar in baked items, such as biscuits, buns, cakes, pastries and puddings, as well as breakfast cereals, when compared with their gluten-containing counterpart.

Out of the 50 items analysed, 25 (14 GF, 11 gluten-containing) products were classified as high in sugar (over 22.5 g/100 g) according to the Department of Health, highlighted as 'red' following the front of pack traffic light system.

The analysis of the product packaging highlighted that the majority of the GF products used emotive language in order to persuade the consumer to buy the product. Phrases like 'food for health conscious people too busy to cook'; 'just because its gluten-free, it doesn't need to be fun free'; 'all natural ingredients'; 'this is genius'; 'freedom to enjoy the food you love'; and 'deliciously gluten-free' highlight that GF brands are targeting consumers both with medical and non-medical conditions, encouraging them to purchase GF products as they appear to be hiding beneath a 'health halo'.

Conclusions: This study highlights that a Gluten-free diet does not necessarily provide an improved healthier lifestyle, unless medically necessary.

Implications for practice:

This study emphasises the 'health halo' phenomena, where foods for special diets are regarded by consumers as healthy when in fact they are not. It is important that members of the dental team are aware of the possible implications of a gluten-free diet where it is not medically indicated, coupled with reliance on convenience foods.

REFERENCE

1. Rothburn N, Fairchild R, Morgan M. Gluten-free foods: a 'health halo' too far for oral health? British Dental Journal (2022). <https://doi-org.innopac.wits.ac.za/10.1038/s41415-022-4424-2>

CPD questionnaire on page 444



The Continuous Professional Development (CPD) section provides for twenty general questions and five ethics questions. The section provides members with a valuable source of CPD points whilst also achieving the objective of CPD, to assure continuing education. The importance of continuing professional development should not be underestimated, it is a career-long obligation for practicing professionals.