Special Care Advocates in Dentistry

2022 Literature Review

SAID's Search of Dental Literature

Published in Calendar Year 2021

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SAID Search Terms

Limits: 2021; Humans; English

1282 titles; 295 abstracts; 52 full articles reviewed

Stand-Alone Terms:
Dental Care for Disabled [Mesh]
Dental Care for Chronically Ill [Mesh]
Dental Care for Aged [Mesh]
Dental Service, Hospital [Mesh]
Keywords: special care dentistry; special needs dentistry
Gingival Overgrowth [Mesh]
Silver Diamine Fluoride [Supplementary Concept]

Disability-terms combined with dental terms:
Disabled Persons [Mesh]; Chromosome Disorders [Mesh];
Brain Diseases [Mesh] NOT Brain Abscess [Mesh]
Mental Disorders [Mesh]; Mental Health [Mesh]
Communication Disorders [Mesh]; Seizures [Mesh];
Enteral Nutrition [Mesh]; Self-Injurious Behaviors [Mesh]
Keywords: disability, disabled, special needs, Down syndrome, cerebral palsy, intellectual disability, autism, autistic, mental illness

Sedative terms combined with dental terms:
Conscious Sedation [Mesh]; Deep Sedation [Mesh]; Nitrous Oxide [Mesh]
Anesthesia, General [Mesh]; Anesthesia, Intravenous [Mesh]
Keywords: sedation, general anesthesia

Other terms combined with dental terms:
Immobilization [Mesh]; Antibiotic Prophylaxis [Mesh]
Gastroesophageal Reflux [Mesh]; Gagging [Mesh]
Keywords: medical restraint, medical immobilization, protective stabilization, behavioral management, behavior management, behavioral support, behavior support, GERD

Dental terms:
Dental Health Services [Mesh]
Dentistry [Mesh]
Oral Health [Mesh]
Stomatognathic Diseases [Mesh]*
Keywords: dental care

*bruxism combined with disability terms

The following is a subset of the abstracts reviewed.

Periodontal – Systemic Connections:

1. Periodontal health, cognitive decline, and dementia: A systematic review and meta-analysis of longitudinal studies. Sam Asher, Ruth Stephen, Päivi Mäntylä, Anna Liisa Suominen, Alina Solomon. September 2022.

   Background: Emerging evidence indicates that poor periodontal health adversely impacts cognition. This review examined the available longitudinal evidence concerning the effect of poor periodontal health on cognitive decline and dementia. Methods: Comprehensive literature search was conducted on five electronic databases for relevant studies published until April 2022. Longitudinal studies having periodontal health as exposure and cognitive decline and/or dementia as outcomes were considered. Random effects pooled estimates and 95% confidence intervals were generated (pooled odds ratio for cognitive decline and hazards ratio for dementia) to assess whether poor periodontal health increases the risk of cognitive decline and dementia. Heterogeneity between studies was estimated by I2 and the quality of available evidence was assessed through quality assessment criteria. Results: Adopted search strategy produced 2132 studies for cognitive decline and 2023 for dementia, from which 47 studies (24 for cognitive decline and 23 for dementia) were included in this review. Poor periodontal health (reflected by having periodontitis, tooth loss, deep periodontal pockets, or alveolar bone loss) was associated with both cognitive decline (OR = 1.23; 1.05–1.44) and dementia (HR = 1.21; 1.07–1.38). Further analysis, based on measures of periodontal assessment, found tooth loss to independently increase the risk of both cognitive decline (OR = 1.23; 1.09–1.39) and dementia (HR = 1.13; 1.04–1.23). Stratified analysis based on the extent of tooth loss indicated partial tooth loss to be important for cognitive decline (OR = 1.50; 1.02–2.23) and complete tooth loss for dementia (HR = 1.23; 1.05–1.45). However, the overall quality of evidence was low, and associations were at least partly due to reverse causality. Conclusions: Poor periodontal health and tooth loss appear to increase the risk of both cognitive decline and dementia. However, the available evidence is limited (e.g., highly heterogenous, lacking robust methodology) to draw firm conclusions. Further well-designed studies involving standardized periodontal and cognitive health assessment and addressing reverse causality are highly warranted.

2. Analysis the Link between Periodontal Diseases and Alzheimer's Disease: A Systematic Review. Int J Environ Res Public Health. 2021 Sep 3;18(17):9312. doi: 10.3390/ijerph18179312. Borsa L, Dubois M, Sacco G, Lupi L(1)(2)(3).

   The hypothesis of an infectious connection from the oro-pharyngeal sphere to the brain underlines the interest in analyzing the link between periodontal disease and Alzheimer's disease. The aim of this systematic review was to examine the link between Alzheimer's disease and periodontal disease in patients aged 65 and over. Databases (PubMed (MEDLINE), the Cochrane Library, and Embase) were analyzed for relevant references up to 21 June 2021. The authors independently selected the studies and extracted the data. The quality of included studies was checked using the National Institutes of Health's quality assessment tools. Five studies were included. The selected studies described in their results an increase in F. nucleatum in Alzheimer's disease patients (adjusted p = 0.02), and its incidence was linked to C. rectus and P. gingivalis (adjusted HR = 1.22 (1.04-1.43), p = 0.012) as well as A. naeslundii (crude HR = 2.0 (1.1-3.8)). The presence of periodontitis at baseline was associated with a six-fold increase in the rate of cognitive decline over a 6-month follow-up period (ADAS-Cog mean change = 2.9 ± 6.6). The current review suggests an association between periodontal disease and Alzheimer's disease. The treatment of periodontal disease could be a way to explore Alzheimer's disease prevention.

3. The Role of Inflammatory Diet and Vitamin D on the Link between Periodontitis and Cognitive Function: A Mediation Analysis in Older Adults. Nutrients. 2021 Mar 12;13(3):924. doi: 10.3390/nu13030924. Botelho J, Leira Y, Viana J, Machado V, Lyra P, Aldrey JM, Pías-Peleteiro JM, Blanco J, Sobrino T, Mendes JJ.

   Patients suffering from periodontitis are at a higher risk of developing cognitive dysfunction. However, the mediation effect of an inflammatory diet and serum vitamin D levels in this link is unclear. In total, 2062 participants aged 60 years or older with complete periodontal diagnosis and cognitive tests from the National Health and

Nutrition Examination Survey (NHANES) 2011-2012 and 2013-2014 were enrolled. The Consortium to Establish a Registry for Alzheimer's disease (CERAD) word learning subtest (WLT) and CERAD delayed recall test (DRT), the animal fluency test (AFT) and the digit symbol substitution test (DSST) was used. Dietary inflammatory index (DII) was computed via nutrition datasets. Mediation analysis tested the effects of DII and vitamin D levels in the association of mean probing depth (PD) and attachment loss (AL) in all four cognitive tests. Periodontitis patients obtained worse cognitive test scores than periodontally healthy individuals. DII was negatively associated with CERAD-WLT, CERAD-DRT, AFT and DSST, and was estimated to mediate between 9.2% and 36.4% of the total association between periodontitis with cognitive dysfunction ($p < 0.05$). Vitamin D showed a weak association between CERAD-DRT, AFT and DSST and was estimated to between 8.1% and 73.2% of the association between periodontitis and cognitive dysfunction ($p < 0.05$). The association between periodontitis and impaired cognitive function seems to be mediated both by a proinflammatory dietary load and vitamin D deficiency. Future studies should further explore these mediators in the periodontitis-cognitive decline link.

4. The Effect of Periodontitis on Dementia and Cognitive Impairment: A Meta-Analysis. Int J Environ Res Public Health. 2021 Jun 25;18(13):6823. Guo H, Chang S, Pi X, Hua F, Jiang H, Liu C, Du M.

   The association between periodontal disease and dementia/cognitive impairment continues to receive increasing attention. However, whether periodontal disease is a risk factor for dementia/cognitive impairment is still uncertain. This meta-analysis was conducted to comprehensively analyze the effect of periodontitis on dementia and cognitive impairment, and to assess the periodontal status of dementia patients at the same time. A literature search was undertaken on 19 October 2020 using PubMed, Web of Science, and Embase with different search terms. Two evaluators screened studies according to inclusion and exclusion criteria, and a third evaluator was involved if there were disagreements; this process was the same as that used for data extraction. Included studies were assessed with the Newcastle-Ottawa Scale (NOS), and results were analyzed using software Review Manager 5.2. Twenty observational studies were included. In the comparison between periodontitis and cognitive impairment, the odds ratio (OR) was 1.77 (95% confidence interval (CI), 1.31-2.38), which indicated that there was a strong relationship between periodontitis and cognitive impairment. There was no statistical significance in the effect of periodontitis on dementia (OR = 1.59; 95%CI, 0.92-2.76). The subgroup analysis revealed that moderate or severe periodontitis was significantly associated with dementia (OR = 2.13; 95%CI, 1.25-3.64). The mean difference (MD) of the community periodontal index (CPI) and clinical attachment level (CAL) was 0.25 (95%CI, 0.09-0.40) and 1.22 (95%CI, 0.61-1.83), respectively. In this meta-analysis, there was an association between periodontitis and cognitive impairment, and moderate or severe periodontitis was a risk factor for dementia. Additionally, the deterioration of periodontal status was observed among dementia patients.

5. Which factors influence the oral health of nursing-home residents with cognitive and motor impairments? Aging Clin Exp Res. 2021 Jan;33(1):85-93. Klotz AL, Zajac M, Ehret J, Kilian S, Rammelsberg P, Zenthöfer A.

   BACKGROUND: There is limited information available about the oral and denture hygiene and oral health of nursing-home residents with cognitive and motor impairments. AIMS: The purpose of this study was to identify factors influencing the oral and denture hygiene and oral health of nursing-home residents with cognitive and motor impairments. METHODS: The study was performed in nine nursing-homes in Germany. Sociodemographic and general data were collected for all participants (n = 150). The Clinical Dementia Rating (CDR) was used to identify the presence of dementia, and the Apraxia Screening Test (AST) was used to identify motor impairment. A comprehensive dental examination was also performed. This included the documentation of dental and denture status and the number of decayed, missing and filled teeth (DMFT). In addition, dental and denture hygiene were assessed using the Plaque Index (PI) and the Denture Hygiene Index (DHI). Univariate and multivariate regression models were used to analyse possible factors affecting the dependent target variables. RESULTS: In multivariate regression analysis, the factors that most strongly influenced greater PI were a lower number of medications taken ($p = 0.018$), poorer general health ($p = 0.013$) and the presence of dementia ($p < 0.010$). A more advanced age ($p = 0.036$) and longer nursing-home stay ($p = 0.048$) had a negative effect on the DHI. Furthermore, gender ($p = 0.037$, in favour of women), poorer general health ($p = 0.003$), presence of dementia ($p = 0.003$), and the

absence of natural teeth (p = 0.028) influenced poorer oral health. The factors most strongly influenced greater number of missing teeth were a more advanced age (p = 0.021) and longer nursing-home stay (p = 0.015). In terms of fewer filled teeth, a shorter nursing-home stay (p = 0.002) was the factor most strongly influenced this. CONCLUSIONS: Poorer general health and the presence of apraxia and cognitive impairment are the main determinants for poorer oral hygiene and oral health among nursing-home residents. A longer nursing-home stay also seems to be relevant for oral health and denture hygiene.

6. The Association of Periodontitis and Alzheimer's Disease: How to Hit Two Birds with One Stone. J Alzheimers Dis. 2021;84(1):1-21. doi: 10.3233/JAD-210491. Werber T, Bata Z, Vaszine ES, Berente DB, Kamondi A, Horvath AA.

   Alzheimer's disease (AD) is the leading cause of cognitive impairment in the elderly. Recent evidence suggests that preventive interventional trials could significantly reduce the risk for development of dementia. Periodontitis is the most common dental disease characterized by chronic inflammation and loss of alveolar bone and perialveolar attachment of teeth. Growing number of studies propose a potential link between periodontitis and neurodegeneration. In the first part of the paper, we overview case-control studies analyzing the prevalence of periodontitis among AD patients and healthy controls. Second, we survey observational libraries and cross-sectional studies investigating the risk of cognitive decline in patients with periodontitis. Next, we describe the current view on the mechanism of periodontitis linked neural damage, highlighting bacterial invasion of neural tissue from dental plaques, and periodontitis induced systemic inflammation resulting in a neuroinflammatory process. Later, we summarize reports connecting the four most common periodontal pathogens to AD pathology. Finally, we provide a practical guide for further prevalence and interventional studies on the management of cognitively high-risk patients with and without periodontitis. In this section, we highlight strategies for risk control, patient information, dental evaluation, reporting protocol and dental procedures in the clinical management of patients with a risk for periodontitis and with diagnosed periodontitis. In conclusion, our review summarizes the current view on the association between AD and periodontitis and provides a research and intervention strategy for harmonized interventional trials and for further case-control or cross-sectional studies.

7. Chewing function and related parameters as a function of the degree of dementia: Is there a link between the brain and the mouth? J Oral Rehabil. 2021 Oct;48(10):1160-1172. doi: 10.1111/joor.13231. Epub 2021 Aug 14. Jockusch J, Hopfenmüller W, Nitschke I.

   BACKGROUND: To date, no study has investigated the association between chewing function and related parameters as a function of the degree of dementia using a finer subdivision of the values of the Mini-Mental State Examination (MMSE). OBJECTIVE: This study aimed to investigate the differences in chewing function and related parameters as a function of the degree of dementia. METHODS: An analysis of cross-sectional data obtained from the OrBiD (Oral Health, Bite Force, and Dementia) pilot study was performed. The participants were stratified into five groups based on the outcomes of the MMSE (no dementia, MMSE 28-30; mild cognitive impairment, MMSE 25-27; mild dementia, MMSE 18-24; moderate dementia, MMSE 10-17; severe dementia, MMSE <10). The chewing efficiency, maximum occlusal force and related parameters (number of supporting zones, number of teeth, Eichner index, tooth/denture status, denture quality, and dental treatment needs) were recorded. RESULTS: The MMSE groups showed significantly different chewing efficiencies (p = .003, Jonckheere-Terpstra test) and maximum occlusal forces (p = .003, Jonckheere-Terpstra test), but the number of supporting zones (p = .055, chi-square test) and the number of natural teeth (p = .126, chi-square test) were not different. The Eichner index, tooth/denture status, denture quality and dental treatment need showed no significant associations with the degree of dementia. CONCLUSION: An improvement in the usability of the measurement methods for assessing chewing function in people with dementia is needed. Research involving people with dementia is necessary because the nutritional situation often deteriorates rapidly within a multifactorial system, which includes chewing ability and oral health.

8. Pathophysiological association between periodontal disease and Alzheimer's disease: Importance of periodontal health in the elderly. J Oral Biosci. 2021 Dec;63(4):351-359. Epub 2021 Oct 9. Desta NT.

BACKGROUND: As the global aging population is rapidly advancing, recognizing the full potential of periodontal disease (PD) in the onset or progression of Alzheimer's disease (AD) is important for reducing geriatric morbidity. This review explores the possible role of PD in the pathogenesis of AD, as the pathological mechanisms underlying AD are the most well-studied among all types of dementia. The investigation was conducted using the electronic academic databases PubMed and ScienceDirect, employing a combination of keywords "periodontal disease," "periodontitis," "Alzheimer's disease," "dementia," and "Porphyromonas gingivalis." After applying the selection and eligibility criteria and removing overlaps, from an initial search finding of 5933 studies, 11 were finally included for qualitative analysis. HIGHLIGHT: The inflammatory reaction induced by oral pathogenic bacteria related to PD, through complex pathways, may exacerbate inflammation in the central nervous system, thereby contributing to the progression of AD. CONCLUSION: Maintenance of adequate oral hygiene in patients diagnosed with AD is significant because they suffer from a gradual loss of manual dexterity as the disease advances. Additionally, the evidence presents the potential of systemic inflammation from PD-induced pathogenic bacteria, illustrating the grave cyclical progression of AD.

9. Effects of the Co-occurrence of Diabetes Mellitus and Tooth Loss on Cognitive Function. Curr Alzheimer Res. 2021;18(13):1023-1031. Luo H, Tan C, Adhikari S, Plassman BL, Kamer AR, Sloan FA, Schwartz MD, Qi X, Wu B.

   OBJECTIVE: Both diabetes mellitus (DM) and poor oral health are common chronic conditions and risk factors of Alzheimer's disease and related dementia among older adults. This study assessed the effects of DM and complete tooth loss (TL) on cognitive function, accounting for their interactions. METHODS: Longitudinal data were obtained from the 2006, 2012, and 2018 waves of the Health and Retirement Study. This cohort study included 7,805 respondents aged 65 years or older with 18,331 person-year observations. DM and complete TL were self-reported. Cognitive function was measured by the Telephone Interview for Cognitive Status. Random-effect regressions were used to test the associations, overall and stratified by sex. RESULTS: Compared with older adults without neither DM nor complete TL, those with both conditions (b = -1.35, 95% confidence interval [CI]: -1.68, -1.02), with complete TL alone (b = -0.67, 95% CI: -0.88, -0.45), or with DM alone (b = -0.40, 95% CI: -0.59, -0.22), had lower cognitive scores. The impact of having both conditions was significantly greater than that of having DM alone ($p < .001$) or complete TL alone ($p = 0.001$). Sex-stratified analyses showed the effects were similar in males and females, except having DM alone was not significant in males. CONCLUSION: The co-occurrence of DM and complete TL poses an additive risk for cognition. Healthcare and family-care providers should pay attention to the cognitive health of patients with both DM and complete TL. Continued efforts are needed to improve older adults' access to dental care, especially for individuals with DM.

10. Association between chronic periodontitis and the risk of Alzheimer's disease: combination of text mining and GEO dataset. BMC Oral Health. 2021 Sep 23;21(1):466. Jiang Z, Shi Y, Zhao W, Zhou L, Zhang B, Xie Y, Zhang Y, Tan G, Wang Z.

    BACKGROUND: Although chronic periodontitis has previously been reported to be linked with Alzheimer's disease (AD), the pathogenesis between the two is unclear. The purpose of this study is to analyze and screen the relevant and promising molecular markers between chronic periodontitis and Alzheimer's disease (AD). METHODS: In this paper, we analyzed three AD expression datasets and extracted differentially expressed genes (DEGs), then intersected them with chronic periodontitis genes obtained from text mining, and finally obtained integrated DEGs. We followed that by enriching the matching the matching cell signal cascade through DAVID analysis. Moreover, the MCODE of Cytoscape software was employed to uncover the protein-protein interaction (PPI) network and the matching hub gene. Finally, we verified our data using a different independent AD cohort. RESULTS: The chronic periodontitis gene set acquired from text abstracting was intersected with the previously obtained three AD groups, and 12 common genes were obtained. Functional enrichment assessment uncovered 12 cross-genes, which were mainly linked to cell morphogenesis involved in neuron differentiation, leading edge membrane, and receptor ligand activity. After PPI network creation, the ten hub genes linked to AD were retrieved, consisting of SPP1, THY1, CD44, ITGB1, HSPB3, CREB1, SST, UCHL1, CCL5 and BMP7. Finally, the function terms in the new independent dataset were used to verify the previous dataset, and we found 22 GO terms and one pathway, "ECM-receptor

interaction pathways", in the overlapping functional terms. CONCLUSIONS: The establishment of the above-mentioned candidate key genes, as well as the enriched signaling cascades, provides promising molecular markers for chronic periodontitis-related AD, which may help the diagnosis and treatment of AD patients in the future.

11. Effect of periodontal treatment on preclinical Alzheimer's disease-Results of a trial emulation approach. Alzheimers Dement. 2022 Jan;18(1):127-141. doi: 10.1002/alz.12378. Epub 2021 May 29.Schwahn C, Frenzel S, Holtfreter B, Van der Auwera S, Pink C, Bülow R, Friedrich N, Völzke H, Biffar R, Kocher T, Grabe HJ.

    INTRODUCTION: We investigated the relationship between periodontal treatment and pre-clinical Alzheimer's disease (AD). METHODS: In this quasi-experimental design, 177 periodontally treated patients from the "Greifswald Approach to Individualized Medicine" cohort, which used the same protocols as the population-based Study of Health in Pomerania TREND (SHIP-TREND), and 409 untreated subjects from SHIP-TREND were analyzed. Subjects were younger than 60 years at the magnetic resonance imaging examination, with a median observation period of 7.3 years. Imaging markers for brain atrophy in late-onset AD and brain aging were used as the outcomes. RESULTS: Robust to sensitivity analyses, periodontal treatment had a favorable effect on AD-related brain atrophy (-0.41; 95% confidence interval: -0.70 to -0.12; P = .0051), which corresponds to a shift from the 50th to the 37th percentile of the outcome distribution. For brain aging, the treatment effect was uncertain. CONCLUSION: Periodontitis is related to pre-clinical AD in our population.

12. More Teeth and Posterior Balanced Occlusion Are a Key Determinant for Cognitive Function in the Elderly. Int J Environ Res Public Health. 2021 Feb 19;18(4):1996. doi: Park T, Jung YS, Son K, Bae YC, Song KB, Amano A, Choi YH.

    Age-related decline in cognitive function is a major challenge in geriatric healthcare. A possible explanation is that the tooth loss or low chewing ability is at cause of cognitive impairment or dementia. The study aimed to investigate the potential relationship between chewing ability and cognitive function in the elderly. A total of 563 participants aged 65 years or over residing in urban and rural areas of South Korea were surveyed. The chewing ability was measured by objectively measurable indications such as the number of remaining teeth, denture status, color-changeable gum, and occlusal balance using T-Scan III®. The cognitive function was measured by the Korean version of Mini-Mental State Examination-Dementia Screening (MMSE-DS) and a score of 24 or more (out of 30) indicates a normal cognition, below 23 indicates cognitive impairment. The association between socio-demographic factors, chewing ability factors, and cognitive function demonstrated statistically significant results. When comparing the denture status and chewing ability, the proportion of need denture group had fewer remaining teeth and anterior balanced occlusion. The average number of remaining teeth in anterior balanced occlusion with cognitive impairment was 11.2 compared to posterior balanced occlusion with the normal cognition 19.2. A multiple linear regression analysis declared a significant correlation between number of remaining teeth, denture status, occlusal balance, and cognitive function. Results of the present study revealed objectively measurable indications are suitable for chewing ability assessment and correlated with cognitive function.

13. Better oral hygiene is associated with lower risk of stroke. J Periodontol. 2021 Jan;92(1):87-94. doi: 10.1002/JPER.20-0053. Epub 2020 Jun 12. Chang Y, Woo HG, Lee JS, Song TJ.

    BACKGROUND: Periodontal disease or poor oral hygiene may lead to local infection, inflammation, and systemic inflammatory reactions, which are important mediators of development of stroke. We aimed to investigate the association of oral hygiene with risk of stroke in a nationwide population-based cohort. METHODS: From Korean National Health Insurance System-Health Screening Cohort, 206,602 participants without missing data regarding demographic information, medical history, or blood/urine examination results were included. The presence of periodontal disease and indicators of oral hygiene, such as number of tooth brushings, dental visit history, dental scaling, and number of teeth loss and dental caries were evaluated. Occurrence of stroke including cerebral infarction, cerebral hemorrhage, and subarachnoid hemorrhage was defined as newly registration of International Classification of Diseases-10 codes from I60 to I64 accompanying brain CT and/or MR examination at that time of diagnosis. RESULTS: The 7337 (3.6%) cases of stroke including 5795 (79.0%) cases of cerebral infarction, 1568 (21.4%) cases of cerebral hemorrhage, and 621 (8.5%) cases of subarachnoid hemorrhage occurred during a median

10.4 years follow-up. In multivariable analysis, frequent tooth brushing (≥3 times per day) was negatively associated with risk of stroke occurrence (hazard ratio [HR]: 0.78, 95% confidence interval [CI]: 0.73-0.84). Number of dental caries (≥4) was positively related to stroke occurrence (HR: 1.28, 95% CI: 1.13-1.44). CONCLUSIONS: Regular oral hygiene behavior was negatively, and infrequent oral hygiene care was positively associated with risk of occurrence for stroke, respectively. Brushing one's teeth three or more times daily may be associated with lower risk of stroke.

14. Oral hygiene in stroke survivors undergoing rehabilitation: does upper extremity motor function matters? Top Stroke Rehabil. 2021 Oct;28(7):531-536. doi: 10.1080/10749357.2020.1845013. Epub 2020 Nov 7. Lawal IU, Ibrahim R, Ramphoma KJ.

    Background: Traditionally, stroke rehabilitation outcomes are based on indicators of physical function, such measures may underrate the all-inclusive impact of stroke such as oral health.Objectives: To investigate the relationship between upper extremity motor function and oral hygiene status as well as the impact of stroke on Oral Health-Related Quality of Life (OHRQoL).Methods: Sixty stroke survivors were included in this cross-sectional survey. Spasticity and motor function/mobility of the affected upper extremity were assessed using the Modified Ashworth Scale and Action Research Arm Test, respectively. Oral hygiene was assessed using the Simplified Oral Hygiene Index and oral health impact was assessed using the 14-item Oral Health Impact Profile. Pearson's moment correlation coefficient was used to determine the relationship between oral hygiene and upper extremity motor function variables.Results: There were significant relationships between the oral hygiene index and Shoulder muscles spasticity ($r = 0.374$, $p = .01$), wrist muscles spasticity ($r = 0.352$, $p = .01$), as well as basic mobility ($r = 0.423$, $p = .01$). An estimated 8% ($n = 5$) of study participants have their QoL strongly impacted by their oral health.Conclusions: Upper extremity motor function variables such as spasticity and basic mobility matters in determining oral hygiene status after stroke. Stroke has little impact on oral health-related quality of life.

15. Severe periodontitis is associated with the serum levels of hypersensitive C reactive protein and lipoprotein-associated phospholipase A2 in the patients of acute ischemic stroke. J Clin Neurosci. 2021 Jun;88:232-236. Chen C, Zhu J, Deng X, Yang Z, Lin W, Ma Y, Huang S, Chen L, Liu Y, Zhu F.

    BACKGROUND: Periodontitis is associated with the pathogenesis of atherosclerotic plaque, and hypersensitive C reactive protein (hs-CRP) and lipoprotein-associated phospholipase A2 (Lp-PLA2) are the serum biomarkers of the stability of atherosclerotic plaque. Whether periodontitis is associated with the serum level of hs-CRP and Lp-PLA2 of acute ischemic stroke remains unclear. MATERIAL AND METHODS: We recruited 103 cases with acute ischemic stroke within 7 days after stroke onset. Pocket depth and clinical attachment loss were assessed by oral examination to define the severe periodontitis. Demographic information including gender, age and body weight index, income level, education level, past medical history include smoking history, drinking history, ischemic stroke history, coronary heart disease, hypertension, diabetes and hyperlipidemia were collected, and serum biomarkers including white blood cell (WBC), fibrinogen, total cholesterol (TC), triglyceride (TG), lower density lipoprotein (LDL-C), high density lipoprotein (HDL-C), hs-CRP, HemoglobinA1c (HbAlc), Homocysteine (HCY) and Lp-PLA2 were tested. RESULTS: 65 (63.1%) cases were diagnosed as severe periodontitis. Severe periodontitis group showed more male, age, drinking history, higher levels of hs-CRP and Lp-PLA2. Multivariate logistic regression showed that severe periodontitis was were significantly associated with hs-CRP (OR = 2.367, 95%CI: 1.182-4.738; P = .015) and Lp-PLA2 (OR = 2.577, 95% CI: 1.010-6.574; P = .048). CONCLUSIONS: Severe periodontitis is independently associated with the serum Level of hs-CRP and Lp-PLA2 in patients with acute ischemic stroke. Whether the improvement of periodontitis could decrease the occurrence and re-occurrence of ischemic stroke by stablizating atherosclerotic plaque need be further studied in future.

16. Periodontal Disease, Atrial Fibrillation and Stroke. Am Heart J. 2021 May;235:36-43. Sen S, Redd K, Trivedi T, Moss K, Alonso A, Soliman EZ, Magnani JW, Chen LY, Gottesman RF, Rosamond W, Beck J, Offenbacher S.

    BACKGROUND: We recently described the association between periodontal disease (PD) and stroke risk. PURPOSE: The purpose of this study was to test the association between PD, dental care utilization and incident atrial

fibrillation (AF), as well as AF as a mediator to PD- stroke association. METHODS: In dental cohort of the Atherosclerosis Risk in Communities Study (ARIC), participants without prior AF underwent full-mouth periodontal measurements. PD was defined on an ordinal scale as healthy (referent), mild, moderate and severe. In ARIC main cohort, participants were classified as regular or episodic dental care users. These patients were followed for AF, over 17 years. Cox proportional hazards models adjusted for AF risk factors were used to study relationships between PD severity, dental care utilization and AF. Mediation analysis was used to test if AF mediated the PD-stroke association. RESULTS: In dental ARIC cohort, 5,958 were assessed without prior AF, 754 were found to have AF. Severe PD was associated with AF on both univariable (crude HR, 1.54; 95% CI, 1.26-1.87) and multivariable (adjusted HR, 1.31, 95% CI, 1.06-1.62) analyses. Mediation analysis suggested AF mediates the association between PD and stroke. In the main ARIC cohort, 9,666 participants without prior AF were assessed for dental care use, 1558 were found to have AF. Compared with episodic users, regular users had a lower risk for AF on univariable (crude HR, 0.82, 95% CI, 0.74-0.90) and multivariable (adjusted HR, 0.88, 95% CI, 0.78-0.99) analyses. CONCLUSIONS: PD is associated with AF. The association may explain the PD-stroke risk. Regular users had a lower risk of incident AF compared with episodic users.

17. How strong is the link between periodontitis and stroke? Evid Based Dent. 2021 Jan;22(1):10-11. Baniulyte G, Piela K, Culshaw S. Comment on Vasc Health Risk Manag. 2019 Nov 06;15:519-532.

    Data sources PubMed, Scopus, Web of Science, The Cochrane Library, LILACS, OpenGrey and Google Scholar. No language restriction applied; studies conducted until September 2018.Study selection Observational studies in humans exposed and not exposed to periodontitis, in which the primary outcome was the risk of cerebrovascular accident, including haemorrhagic and ischaemic attacks (transient ischaemic attack and ischaemic stroke).Data extraction and synthesis Three examiners conducted a literature search. Duplicates, opinion articles, technical articles, guides and animal studies were excluded. Quality assessment was carried out followed by assessment of risk of bias. The extracted data were analysed using RevMan software. The meta-analysis looked for odds ratio (OR) in case-control studies and risk ratio (RR) in cohort studies as well as their 95% confidence intervals. Results Ten studies were included, all showing low risk of bias. The number of patients ranged from 80 to 15,792 with follow-up duration from 0 to 15 years. The studies showed variable heterogeneity. For stroke in case-control studies (seven studies), the overall heterogeneity was considerable (I^2 = 77%). For ischaemic stroke in case-control studies (five studies), the overall heterogeneity was considerable (I^2 = 72%), but after an outlying study was removed (I^2 = 78%), it reduced significantly (I^2 = 4%). For stroke in cohort studies (three studies), null heterogeneity was observed (I^2 = 0%). The meta-analysis informed the three main outcomes: 1) individuals with periodontitis were twice as likely to suffer stroke (OR 2.31 [1.39, 3.84], p = 0.001, I^2 = 77%); 2) individuals with periodontitis were twice as likely to suffer ischaemic stroke (OR 2.72 [2.00, 3.71], p <0.00001, I^2 = 4%); and 3) individuals with periodontitis had a higher risk of experiencing stroke (RR 1.88 [1.55, 2.28], p <0.00001). Overall, the authors found that stroke events were associated with periodontitis. Conclusions The meta-analysis suggests an association between risk of stroke and periodontal disease. However, there is a need for prospective studies to ascertain the relationship between periodontal disease severity and stroke severity; whether there is an impact of periodontal treatment and to review whether periodontal disease impacts on stroke survival.

18. Number of teeth is independently associated with ischemic stroke: A case-control study. J Clin Neurosci. 2021 Aug;90:233-237. Leao TSS, Zanoni AV, Franzon R, Tomasi GH, Conzatti LP, Marrone LCP, Reynolds MA, Gomes MS.

    Poor oral health has been suggested as a potential risk factor for the occurrence of cardiovascular events. The present study aimed to test the hypothesis that the number of permanent natural teeth (NT) is independently associated with the occurrence of ischemic stroke (IS) or transient ischemic attack (TIA) in a southern Brazilian population. This case-control study enrolled 458 subjects, 229 hospital patients diagnosed with IS or TIA (cases) and 229 patients with no history of cardiovascular disease (controls). NT was assessed through a head and neck multidetector computed tomography angiography (MDCTA) and panoramic radiographs. The participants were matched by age and sex. Sociodemographic and medical confounding variables were obtained from the hospital charts and through a structured questionnaire. Multivariate logistic regression analysis were carried out to estimate

the association between NT and the occurrence of IS or TIA. The mean age was 58.37 ± 10.75 years, with 46.7% males. Adjusted analyses showed an independent association between IS or TIA and hypertension (OR = 6.34, 95%CI = 3.93-10.24), smoking (OR = 4.70, 95%CI = 2.76-7.99) and NT (lower quartile: ≤7 teeth) (OR = 5.59, 95%CI = 2.88-10.86). The number of permanent natural teeth was inversely and independently associated with the occurrence of IS or TIA in this population. Present findings suggest a gradient effect on the association between oral health and IS.

19. Tooth Loss and Blood Pressure in Parkinson's Disease Patients: An Exploratory Study on NHANES Data. Int J Environ Res Public Health. 2021 May 10;18(9):5032. doi: 10.3390/ijerph18095032. Lyra P, Machado V, Proença L, Mendes JJ, Botelho J.

    Objectives: To evaluate tooth loss severity in PD patients and the impact of missing teeth on blood pressure (BP) and glycated hemoglobin (Hba1c) levels. Methods: All adults reporting specific PD medication regimens with complete dental examinations were included from the NHANES 2001 to 2018 databases. Sociodemographic, systolic BP (SBP), diastolic BP (DBP) and Hba1c data were compared according to tooth loss severity, and linear regression analyses on the impact of tooth loss on SBP, DBP and Hba1c levels were conducted. Results: The 214 included participants presented 9.7 missing teeth, 23.8% severe tooth loss and 18.2% total edentulousness. Severe tooth loss cases were significantly older ($p < 0.001$), had higher smoking prevalence ($p = 0.008$), chronic medical conditions ($p = 0.012$) and higher Hba1c ($p = 0.001$), SBP ($p = 0.015$) and DBP ($p < 0.001$) levels. Crude and adjusted linear models revealed a relationship between SBP, DBP and missing teeth; however, age confounded these links (SBP: $B = 0.10$, $SE = 0.16$, $p < 0.05$; DBP: $B = 0.16$, $SE = 0.10$, $p < 0.05$). Tooth loss presented no significant relationship with Hba1c levels. Conclusions: Severe tooth loss is prevalent among PD patients. Blood pressure levels showed a positive linear relationship with the number of missing teeth, although age was a confounding factor. Furthermore, tooth loss and Hba1c levels revealed no significant linear relationship.

20. Causal Association between Periodontitis and Parkinson's Disease: A Bidirectional Mendelian Randomization Study. Genes (Basel). 2021 May 19;12(5):772. Botelho J, Machado V, Mendes JJ, Mascarenhas P.

    The latest evidence revealed a possible association between periodontitis and Parkinson's disease (PD). We explored the causal relationship of this bidirectional association through two-sample Mendelian randomization (MR) in European ancestry populations. To this end, we used openly accessible data of genome-wide association studies (GWAS) on periodontitis and PD. As instrumental variables for periodontitis, seventeen single-nucleotide polymorphisms (SNPs) from a GWAS of periodontitis (1817 periodontitis cases vs. 2215 controls) and eight non-overlapping SNPs of periodontitis from an additional GWAS for validation purposes. Instrumental variables to explore for the reverse causation included forty-five SNPs from a GWAS of PD (20,184 cases and 397,324 controls). Multiple approaches of MR were carried-out. There was no evidence of genetic liability of periodontitis being associated with a higher risk of PD ($B = -0.0003$, Standard Error [SE] 0.0003, $p = 0.26$). The eight independent SNPs ($B = -0.0000$, SE 0.0001, $p = 0.99$) validated this outcome. We also found no association of genetically primed PD towards periodontitis ($B = -0.0001$, SE 0.0001, $p = 0.19$). These MR study findings do not support a bidirectional causal genetic liability between periodontitis and PD. Further GWAS studies are needed to confirm the consistency of these results.

21. Evaluation of the association between periodontitis and risk of Parkinson's disease: a nationwide retrospective cohort study. 122. Sci Rep. 2021 Aug 16;11(1):16594. doi: 10.1038/s41598-021-96147-4. Jeong E, Park JB, Park YG.

    The objective of this study was to examine the association between periodontitis and risk of incident Parkinson's disease using large-scale cohort data on the entire population of South Korea. Health checkup data from 6,856,180 participants aged 40 and older were provided by the National Health Insurance Service of South Korea between January 1, 2009, and December 31, 2009, and the data were followed until December 31, 2017. The hazard ratio (HR) of Parkinson's disease and 95% confidence interval (CI) were estimated using a Cox proportional hazards model adjusted for potential confounders. The incidence probability of Parkinson's disease was positively correlated with the presence of periodontitis. The HR of Parkinson's disease for the participants without the need of further

dentist visits was 0.96 (95% CI 0.921-1.002); the HR of Parkinson's disease increased to 1.142 (95% CI 1.094-1.193) for the individuals who needed further dentist visits. Compared to individuals without periodontitis and without metabolic syndrome, the HR of incident Parkinson's disease gradually increased for individuals with periodontitis, with metabolic syndrome, and with both periodontitis and metabolic syndrome. People with periodontitis and metabolic syndrome had the highest HR of incident Parkinson's disease, at 1.167 (95% CI 1.118-1.219). In conclusion, a weak association between periodontitis and Parkinson's disease was suggested after adjusting for confounding factors from the population-based large-scale cohort of the entire South Korean population.

22. Oral Dysbiosis and Inflammation in Parkinson's Disease. J Parkinsons Dis. 2021;11(2):619-631. Fleury V, Zekeridou A, Lazarevic V, Gaïa N, Giannopoulou C, Genton L, Cancela J, Girard M, Goldstein R, Bally JF, Mombelli A, Schrenzel J, Burkhard PR.

    BACKGROUND: Oral microbiota has largely escaped attention in Parkinson's disease (PD), despite its pivotal role in maintaining oral and systemic health. OBJECTIVE: The aim of our study was to examine the composition of the oral microbiota and the degree of oral inflammation in PD. METHODS: Twenty PD patients were compared to 20 healthy controls. Neurological, periodontal and dental examinations were performed as well as dental scaling and gingival crevicular fluid sampling for cytokines measurement (interleukine (IL)-1β, IL-6, IL-1 receptor antagonist (RA), interferon-γ and tumor necrosis factor (TNF)-α). Two months later, oral microbiota was sampled from saliva and subgingival dental plaque. A 16S rRNA gene amplicon sequencing was used to assess bacterial communities. RESULTS: PD patients were in the early and mid-stage phases of their disease (Hoehn & Yahr 2-2.5). Dental and periodontal parameters did not differ between groups. The levels of IL-1β and IL-1RA were significantly increased in patients compared to controls with a trend for an increased level of TNF-α in patients. Both saliva and subgingival dental plaque microbiota differed between patients and controls. Streptococcus mutans, Kingella oralis, Actinomyces AFQC_s, Veillonella AFUJ_s, Scardovia, Lactobacillaceae, Negativicutes and Firmicutes were more abundant in patients, whereas Treponema KE332528_s, Lachnospiraceae AM420052_s, and phylum SR1 were less abundant. CONCLUSION: Our findings show that the oral microbiome is altered in early and mid-stage PD. Although PD patients had good dental and periodontal status, local inflammation was already present in the oral cavity. The relationship between oral dysbiosis, inflammation and the pathogenesis of PD requires further study.

23. Establishment of Down's syndrome periodontal ligament cells by transfection with SV40T-Ag and hTERT. Hum Cell. 2022 Jan;35(1):379-383. Asakawa T, Yamada A, Kugino M, Hasegawa T, Yoshimura K, Sasa K, Kinoshita M, Nitta M, Nagata K, Sugiyama T, Kamijo R, Funatsu T.

    Down's syndrome is one of the most common human congenital genetic diseases and affected patients have increased risk of periodontal disease. To examine involvement of the disease with periodontal disease development, we established immortalized periodontal ligament cells obtained from a Down's syndrome patient by use of SV40T-Ag and hTERT gene transfection. Expressions of SV40T-Ag and hTERT were observed in periodontal ligament cell-derived immortalized cells established from healthy (STPDL) and Down's syndrome patient (STPDLDS) samples. Primary cultured periodontal ligament cells obtained from a healthy subject (pPDL) had a limited number of population doublings (< 40), while STPDL and STPDLDS cells continued to grow with more than 80 population doublings. Primary cultured periodontal ligament cells obtained from the patient showed a chromosome pattern characteristic of Down's syndrome with trisomy 21, whereas STPDLDS samples showed a large number of abnormal chromosomes in those results. Gene expression analysis revealed that expression of DSCR-1 in STPDLDS is greater than that in STPDL. These results suggest that the newly established STPDLDS cell line may be a useful tool for study of periodontal disease in Down's syndrome patients.

24. Oral Microbiota Features in Subjects with Down Syndrome and Periodontal Diseases: A Systematic Review. Int J Mol Sci. 2021 Aug 26;22(17):9251. doi: 10.3390/ijms22179251. Contaldo M, Lucchese A, Romano A, Della Vella F, Di Stasio D, Serpico R, Petruzzi M.

    Down syndrome (DS) is a genetic disorder associated with early-onset periodontitis and other periodontal diseases (PDs). The present work aimed to systematically review the scientific literature reporting studies in vivo on oral

microbiota features in subjects with DS and related periodontal health and to highlight any correlation and difference with subjects not affected by DS, with and without PDs. PubMed, Web of Science, Scopus and Cochrane were searched for relevant studies in May 2021. The participants were subjects affected by Down syndrome (DS) with and without periodontal diseases; the study compared subjects with periodontal diseases but not affected by DS, and DS without periodontal diseases; the outcomes were the differences in oral microbiota/periodontopathogen bacterial composition among subjects considered; the study design was a systematic review. Study quality was assessed with risk of bias in non-randomized studies of interventions (ROBINS-I). Of the 954 references retrieved, 26 studies were considered. The conclusions from the qualitative assessment of the papers revealed an increasing knowledge over the last years of the microbiota associated with DS and their periodontal diseases, in comparison with healthy subjects and subjects with other kinds of mental disabilities. Few data have emerged on the mycobiome and virobiome of DS, hence, further investigations are still necessary.

25. Genetic Susceptibility to Periodontal Disease in Down Syndrome: A Case-Control Study. Int J Mol Sci. 2021 Jun 10;22(12):6274. doi: 10.3390/ijms22126274. Fernández M, de Coo A, Quintela I, García E, Diniz-Freitas M, Limeres J, Diz P, Blanco J, Carracedo Á, Cruz R.

    Severe periodontitis is prevalent in Down syndrome (DS). This study aimed to identify genetic variations associated with periodontitis in individuals with DS. The study group was distributed into DS patients with periodontitis (n = 50) and DS patients with healthy periodontium (n = 36). All samples were genotyped with the "Axiom Spanish Biobank" array, which contains 757,836 markers. An association analysis at the individual marker level using logistic regression, as well as at the gene level applying the sequence kernel association test (SKAT) was performed. The most significant genes were included in a pathway analysis using the free DAVID software. C12orf74 (rs4315121, p = 9.85 × 10-5, OR = 8.84), LOC101930064 (rs4814890, p = 9.61 × 10-5, OR = 0.13), KBTBD12 (rs1549874, p = 8.27 × 10-5, OR = 0.08), PIWIL1 (rs11060842, p = 7.82 × 10-5, OR = 9.05) and C16orf82 (rs62030877, p = 8.92 × 10-5, OR = 0.14) showed a higher probability in the individual analysis. The analysis at the gene level highlighted PIWIL, MIR9-2, LHCGR, TPR and BCR. At the signaling pathway level, PI3K-Akt, long-term depression and FoxO achieved nominal significance (p = 1.3 × 10-2, p = 5.1 × 10-3, p = 1.2 × 10-2, respectively). In summary, various metabolic pathways are involved in the pathogenesis of periodontitis in DS, including PI3K-Akt, which regulates cell proliferation and inflammatory response.

26. Risk of incident cardiovascular disease in people with periodontal disease: A systematic review and meta-analysis. Clin Exp Dent Res. 2021 Feb;7(1):109-122. Larvin H, Kang J, Aggarwal VR, Pavitt S, Wu J.

    OBJECTIVES: Cardiovascular disease (CVD) is a major cause of mortality; periodontal disease (PD) affects up to 50% of the world's population. Observational evidence has demonstrated association between CVD and PD. Absent from the literature is a systematic review and meta-analysis of longitudinal cohort studies quantifying CVD risk in PD populations compared to non-PD populations. To examine the risk of incident CVD in people with PD in randomised controlled trials and longitudinal cohort studies. MATERIAL AND METHODS: We searched Medline, EMBASE and Cochrane databases up to 9th Oct 2019 using keywords and MeSH headings using the following concepts: PD, CVD, longitudinal and RCT study design. CVD outcomes included but were not restricted to any CVD, myocardial infarction, coronary heart disease (CHD) and stroke. Diagnosis method and severity of PD were measured either clinically or by self-report. Studies comparing incident CVD in PD and non-PD populations were included. Meta-analysis and meta-regression was performed to determine risk of CVD in PD populations and examine the effects of PD diagnosis method, PD severity, gender and study region. RESULTS: Thirty-two longitudinal cohort studies were included after full text screening; 30 were eligible for meta-analysis. The risk of CVD was significantly higher in PD compared to non-PD (relative risk [RR]: 1.20, 95% CI: 1.14-1.26). CVD risk did not differ between clinical or self-reported PD diagnosis (RR = 0.97, 95% CI: 0.87-1.07,). CVD risk was higher in men (RR: 1.16, 95% CI: 1.08-1.25) and severe PD (RR: 1.25, 95% CI: 1.15-1.35). Among all types of CVD, the risk of stroke was highest (RR = 1.24; 95% CI:1.12-1.38), the risk of CHD was also increased (RR = 1.14; 95% CI:1.08-1.21). CONCLUSION: This study demonstrated modest but consistently increased risk of CVD in PD populations. Higher CVD risk in men and people with severe PD suggests population-targeted interventions could be beneficial.

27. Local and systemic mechanisms linking periodontal disease and inflammatory comorbidities. Nat Rev Immunol. 2021 Jul;21(7):426-440. Hajishengallis G, Chavakis T.

    Periodontitis, a major inflammatory disease of the oral mucosa, is epidemiologically associated with other chronic inflammation-driven disorders, including cardio-metabolic, neurodegenerative and autoimmune diseases and cancer. Emerging evidence from interventional studies indicates that local treatment of periodontitis ameliorates surrogate markers of comorbid conditions. The potential causal link between periodontitis and its comorbidities is further strengthened by recent experimental animal studies establishing biologically plausible and clinically consistent mechanisms whereby periodontitis could initiate or aggravate a comorbid condition. This multi-faceted 'mechanistic causality' aspect of the link between periodontitis and comorbidities is the focus of this Review. Understanding how certain extra-oral pathologies are affected by disseminated periodontal pathogens and periodontitis-associated systemic inflammation, including adaptation of bone marrow haematopoietic progenitors, may provide new therapeutic options to reduce the risk of periodontitis-associated comorbidities.

28. Investigating the relationship between the severity of periodontitis and rheumatoid arthritis: a cross-sectional study. Clin Rheumatol. 2021 Aug;40(8):3153-3160. Punceviciene E, Rovas A, Puriene A, Stuopelyte K, Vitkus D, Jarmalaite S, Butrimiene I.

    OBJECTIVES: This paper evaluates the prevalence and severity of periodontitis (PD) in patients with rheumatoid arthritis (RA), focusing on the link between the severity of PD with RA disease activity/disability scores, the influence of RA treatment on PD, and levels of vitamin D. METHODS: A total of 93 RA patients were enrolled in the cross-sectional study and analyzed accordingly as RA-PD (N = 63, 67.8%) and RA-only (N = 30, 32.2%) groups. A number of associations between rheumatological clinical data, i.e., Disease Activity Score (DAS28 CRP), health assessment questionnaires, and PD severity (measured by periodontal outcome parameters) with regard to serum levels of vitamin D were assessed. The outcome variables were compared by parametric and non-parametric tests. RESULTS: A total of 29% of RA patients were diagnosed with severe PD. The RA-PD group presented a higher mean DAS28 CRP score in moderate-severe PD compared to periodontally healthy-initial stage PD subjects (4.49 ± 1.22 vs. 3.86 ± 1.58, p = 0.033). RA patients treated with biologic disease-modifying antirheumatic drugs (bDMARDs) were less likely to be diagnosed with PD (p = 0.022) and revealed significantly lower PD outcome parameters, i.e., bleeding on probing (%) and bone loss (%) ($p < 0.05$). Vitamin D concentration was significantly lower in RA-PD group with diagnosed advanced severe PD (IV stage) compared to moderate PD (II stage) (39.61 ± 17.12 vs. 52.07 ± 18.23 nmol/l, p = 0.031). CONCLUSIONS: The study revealed a high prevalence of severe PD in RA patients, being significantly associated with higher RA disease activity and lower vitamin D level in RA-PD group, while bDMARD treatment was related to lower PD outcome parameters. Key Points • Severe PD is prevalent amongst RA patients and is associated with RA disease activity. The higher RA DAS28 CRP score is associated with moderate-severe PD compared to periodontally healthy-initial stage PD in RA patients. • Biologic DMARDs treatment used for RA is linked to lower PD rates and PD outcome parameters. • Significantly lower vitamin D level is found in advanced severe PD compared to moderate PD stage in RA-PD subjects.

29. Associations of toothbrushing behaviour with risks of vascular and nonvascular diseases in Chinese adults. Eur J Clin Invest. 2021 Dec;51(12):e13634. Zhuang Z, Gao M, Lv J, Yu C, Guo Y, Bian Z, Yang L, Du H, Chen Y, Ning F, Liu H, Chen J, Chen Z, Huang T, Li L.

    Accumulating evidence has shown that poor oral hygiene is associated with increased risk of cardiometabolic diseases in Western populations. However, its relevance about the relationships in Chinese adults remains unclear. The China Kadoorie Biobank enrolled 512 715 adults aged 30-79 years in China during 2004-2008. Cox regression was used to estimate adjusted hazard ratios (HRs) for each disease associated with measures of oral hygiene. Overall 9.3% of the participants reported rarely or never brushing teeth at baseline. Participants who rarely or never brushed teeth had adjusted HR of 1.12 (95% CI: 1.09, 1.15) for MVE, with similar HRs for stroke (1.08, 1.05-1.12), intracerebral haemorrhage (1.18, 1.11-1.26) and pulmonary heart disease (1.22, 1.13-1.32) compared with those who brushed teeth regularly. Those who did not brush teeth also had increased risk of cancer (1.09, 1.04-

1.14), chronic obstructive pulmonary disease (COPD) (1.12, 1.05-1.20), liver cirrhosis (1.25, 1.09-1.44) and all-cause death (1.25, 1.21-1.28) but not type 2 diabetes (0.94, 0.86-1.03) and chronic kidney disease (0.98, 0.81-1.18). Among Chinese adults, we found that poor oral hygiene is associated with higher risks of major vascular disease, cancer, COPD, liver cirrhosis and all-cause deaths, but not type 2 diabetes and chronic kidney disease.

Antibiotics

30. Adapted from: Prevention of Viridans Group Streptococcal Infective Endocarditis: A Scientific Statement From the American Heart Association. J Am Dent Assoc. 2021 Nov;152(11):886-902.e2. Wilson WR, Gewitz M, Lockhart PB, Bolger AF, DeSimone DC, Kazi DS, Couper DJ, Beaton A, Kilmartin C, Miro JM, Sable C, Jackson MA, Baddour LM.

    BACKGROUND: In 2007, the American Heart Association published updated evidence-based guidelines on the recommended use of antibiotic prophylaxis to prevent viridans group streptococcal (VGS) infective endocarditis (IE) in cardiac patients undergoing invasive procedures. The 2007 guidelines significantly scaled back the underlying conditions for which antibiotic prophylaxis was recommended, leaving only 4 categories thought to confer the highest risk of adverse outcome. The purpose of this update is to examine interval evidence of the acceptance and impact of the 2007 recommendations on VGS IE and, if needed, to make revisions based on this evidence. METHODS AND RESULTS: A writing group was formed consisting of experts in prevention and treatment of infective endocarditis including members of the American Dental Association, the Infectious Diseases Society of America, and the American Academy of Pediatrics, in addition to the American Heart Association. MEDLINE database searches were done for English language articles on compliance with the recommendations in the 2007 guidelines and the frequency of and morbidity or mortality from VGS IE after publication of the 2007 guidelines. Overall, there was good general awareness of the 2007 guidelines but variable compliance with recommendations. There was no convincing evidence that VGS IE frequency, morbidity, or mortality has increased since 2007. CONCLUSIONS: On the basis of a review of the available evidence, there are no recommended changes to the 2007 VGS IE prevention guidelines. We continue to recommend VGS IE prophylaxis only for categories of patients at highest risk for adverse outcome while emphasizing the critical role of good oral health and regular access to dental care for all. Randomized controlled studies to determine whether antibiotic prophylaxis is effective against VGS IE are needed to further refine recommendations.

31. Serious antibiotic-related adverse effects following unnecessary dental prophylaxis in the United States. Infect Control Hosp Epidemiol. 2021 Jan;42(1):110-112. Gross AE, Suda KJ, Zhou J, Calip GS, Rowan SA, Hershow RC, Perez R, Evans CT, McGregor JC.

32. Invasive dental procedures as risk factors for postoperative spinal infection and the effect of antibiotic prophylaxis. J Clin Periodontol. 2021 Sep;48(9):1270-1280. doi: 10.1111/jcpe.13514. Epub 2021 Jul 8. Sung S, Kim EH, Kwon JW, Lee JS, Lee SB, Moon SH, Lee HM, Jung I, Lee BH.

    AIM: To identify invasive dental procedures as a risk factor for postoperative spinal infection (PSI) and evaluate the effectiveness of antibiotic prophylaxis. MATERIALS AND METHODS: We analysed 229,335 patients who underwent spinal surgery with instrumentation from 2010 to 2017, using the nationwide database. The incidence of spinal infection 2 years after surgery was determined. Invasive dental procedures as a risk factor for PSI and the effects of antibiotic prophylaxis during this period were also analysed. RESULTS: A total of 15,346 patients (6.69%) were diagnosed with PSI. It was found that advanced age, male sex, and a high Charlson Comorbidity Index were risk factors for PSI. The risk of PSI did not increase following dental procedures (adjusted hazard ratio [HR] 0.850; 95% confidence interval [CI], 0.793-0.912) and was not affected by antibiotics (adjusted HR 1.097; 95% CI, 0.987-1.218). Patients who received dental treatment as early as 3 months after spinal surgery had the lowest risk of postoperative infection (adjusted HR 0.869; 95% CI, 0.795-0.950). CONCLUSIONS: Invasive dental procedure does not increase the risk of PSI, and antibiotic prophylaxis before dental procedure was not effective in preventing spinal infection.

33. Modifications to the 2021 American Heart Association guideline for antibiotic prophylaxis prior to invasive dental procedures: Strengths and pitfalls. Spec Care Dentist. 2022 Mar;42(2):203-205. doi: 10.1111/scd.12655. Epub 2021 Sep 30. Farshidfar N, Hamedani S, Amiri MA, Tovani-Palone MR, Nemati S.

34. "Antibiotic prophylaxis" and "preventive antibiotic therapy": Two sides of the same coin. J Stomatol Oral Maxillofac Surg. 2022 Sep;123(4):e159-e160. Salgado-Peralvo AO, Kewalramani N, Garcia-Sanchez A, Peña-Cardelles JF.

35. Antibiotic prophylaxis in oral and maxillofacial surgery: a systematic review. Br J Oral Maxillofac Surg. 2021 Jul;59(6):633-642. Milic T, Raidoo P, Gebauer D. Comment in Br J Oral Maxillofac Surg. 2021 Dec;59(10):1330.

Surgical site infections are a complication of oral and maxillofacial procedures, with the potential for significant morbidity and mortality. Use of preoperative, perioperative, and postoperative antibiotic prophylaxis to reduce the incidence of surgical site infections must be balanced with considerations of a patients' risk of antibiotic-related adverse events. This review aimed to provide evidence-based recommendations for antibiotic prophylaxis. Searches were conducted using MEDLINE, the Cochrane Library, EMBASE, and PUBMED for maxillofacial procedures including: treatment of dental abscesses, extractions, implants, trauma, temporomandibular joints, orthognathics, malignant and benign tumour removal, and bone grafting, limited to articles published since 2000. A total of 98 out of 280 retrieved papers were included in the final analysis. Systematic reviews were assessed using AMSTAR criteria. Randomised controlled trials were assessed for bias using Cochrane Collaborative tools. The overall quality of evidence was assessed using GRADE. Prophylactic antibiotic use is recommended in surgical extractions of third molars, comminuted mandibular fractures, temporomandibular joint replacements, clean-contaminated tumour removal, and complex implants. Prophylactic antibiotic use is not routinely recommended in fractures of the upper or midface facial thirds. Further research is required to provide recommendations in orthognathic, cleft lip, palate, temporomandibular joint surgery, and maxillofacial surgical procedures in medically-compromised patients.

36. Antibiotics to prevent complications following tooth extractions. Cochrane Database Syst Rev. 2021 Feb 24;2(2):CD003811. Lodi G, Azzi L, Varoni EM, Pentenero M, Del Fabbro M, Carrassi A, Sardella A, Manfredi M. Update of Cochrane Database Syst Rev. 2012 Nov 14;11:CD003811.

BACKGROUND: The most frequent indications for tooth extractions, generally performed by general dental practitioners, are dental caries and periodontal infections. Systemic antibiotics may be prescribed to patients undergoing extractions to prevent complications due to infection. This is an update of a review first published in 2012. OBJECTIVES: To determine the effect of systemic antibiotic prophylaxis on the prevention of infectious complications following tooth extractions. SEARCH METHODS: Cochrane Oral Health's Information Specialist searched the following databases: Cochrane Oral Health Trials Register (to 16 April 2020), the Cochrane Central Register of Controlled Trials (CENTRAL) (the Cochrane Library, 2020, Issue 3), MEDLINE Ovid (1946 to 16 April 2020), Embase Ovid (1980 to 16 April 2020), and LILACS (1982 to 16 April 2020). The US National Institutes of Health Trials Registry (ClinicalTrials.gov) and the World Health Organization International Clinical Trials Registry Platform were searched for ongoing trials. No restrictions were placed on the language or date of publication when searching the electronic databases. SELECTION CRITERIA: We included randomised, double-blind, placebo-controlled trials of systemic antibiotic prophylaxis in patients undergoing tooth extraction(s) for any indication. DATA COLLECTION AND ANALYSIS: At least two review authors independently performed data extraction and 'Risk of bias' assessment for the included studies. We contacted trial authors for further details where these were unclear. For dichotomous outcomes, we calculated risk ratios (RR) and 95% confidence intervals (CI) using random-effects models. For continuous outcomes, we used mean differences (MD) with 95% CI using random-effects models. We examined potential sources of heterogeneity. We assessed the certainty of the body of evidence for key outcomes as high, moderate, low, or very low, using the GRADE approach. MAIN RESULTS: We included 23 trials that randomised approximately 3206 participants (2583 analysed) to prophylactic antibiotics or placebo. Although general dentists perform dental extractions because of severe dental caries or periodontal infection, only one of the trials evaluated the role of antibiotic prophylaxis in groups of patients affected by those clinical conditions. We assessed 16 trials as being at high risk of bias, three at low risk, and four as unclear. Compared to placebo, antibiotics may reduce the

risk of postsurgical infectious complications in patients undergoing third molar extractions by approximately 66% (RR 0.34, 95% CI 0.19 to 0.64; 1728 participants; 12 studies; low-certainty evidence), which means that 19 people (95% CI 15 to 34) need to be treated with antibiotics to prevent one infection following extraction of impacted wisdom teeth. Antibiotics may also reduce the risk of dry socket by 34% (RR 0.66, 95% CI 0.45 to 0.97; 1882 participants; 13 studies; low-certainty evidence), which means that 46 people (95% CI 29 to 62) need to take antibiotics to prevent one case of dry socket following extraction of impacted wisdom teeth. The evidence for our other outcomes is uncertain: pain, whether measured dichotomously as presence or absence (RR 0.59, 95% CI 0.31 to 1.12; 675 participants; 3 studies) or continuously using a visual analogue scale (0-to-10-centimetre scale, where 0 is no pain) (MD -0.26, 95% CI -0.59 to 0.07; 422 participants; 4 studies); fever (RR 0.66, 95% CI 0.24 to 1.79; 475 participants; 4 studies); and adverse effects, which were mild and transient (RR 1.46, 95% CI 0.81 to 2.64; 1277 participants; 8 studies) (very low-certainty evidence). We found no clear evidence that the timing of antibiotic administration (preoperative, postoperative, or both) was important. The included studies enrolled a subset of patients undergoing dental extractions, that is healthy people who had surgical extraction of third molars. Consequently, the results of this review may not be generalisable to all people undergoing tooth extractions. AUTHORS' CONCLUSIONS: The vast majority (21 out of 23) of the trials included in this review included only healthy patients undergoing extraction of impacted third molars, often performed by oral surgeons. None of the studies evaluated tooth extraction in immunocompromised patients. We found low-certainty evidence that prophylactic antibiotics may reduce the risk of infection and dry socket following third molar extraction when compared to placebo, and very low-certainty evidence of no increase in the risk of adverse effects. On average, treating 19 healthy patients with prophylactic antibiotics may stop one person from getting an infection. It is unclear whether the evidence in this review is generalisable to patients with concomitant illnesses or patients at a higher risk of infection. Due to the increasing prevalence of bacteria that are resistant to antibiotic treatment, clinicians should evaluate if and when to prescribe prophylactic antibiotic therapy before a dental extraction for each patient on the basis of the patient's clinical conditions (healthy or affected by systemic pathology) and level of risk from infective complications. Immunocompromised patients, in particular, need an individualised approach in consultation with their treating medical specialist.

37. Postoperative bleeding after dental extraction among elderly patients under anticoagulant therapy. Clin Oral Investig. 2021 Apr;25(4):2363-2371. Inokoshi M, Kubota K, Yamaga E, Ueda K, Minakuchi S.

    OBJECTIVES: This study aimed to assess and compare postoperative bleeding occurrence after dental extraction in medically compromised elderly patients under anticoagulant therapy. MATERIALS AND METHODS: This retrospective study included medically compromised elderly patients aged ≥ 65 years who were taking apixaban, dabigatran, edoxaban, rivaroxaban, or warfarin and had undergone single or multiple dental extractions. The primary outcome measure was postoperative bleeding occurrence, which was defined as oozing or marked hemorrhage from 24 h to 7 days after dental extraction. Postoperative bleeding occurrence was calculated for each anticoagulant and compared using Fisher's exact test, followed by multiple comparisons. RESULTS: Two hundred thirty-two patients met the inclusion criteria. The highest postoperative bleeding occurrence was recorded for rivaroxaban (12/37: 32.4%), followed by apixaban (8/44: 18.2%), warfarin (17/98: 17.3%), and edoxaban (2/35: 5.7%). Patients taking dabigatran did not present postoperative bleeding (0/18: 0%). Fisher's exact test, followed by multiple comparison tests, revealed a significant among-anticoagulant difference (p = 0.0095). Postoperative bleeding was significantly higher in patients taking rivaroxaban than in those taking edoxaban or dabigatran (p = 0.03088). CONCLUSIONS: Within the limitations of this retrospective study design, these findings suggest that different anticoagulants may affect postoperative bleeding occurrence after dental extraction among medically compromised elderly patients. CLINICAL RELEVANCE: Clinicians should carefully consider postoperative bleeding after dental extraction in patients taking anticoagulant therapy, especially rivaroxaban.

38. Antibiotics in Dentoalveolar Surgery, a Closer Look at Infection, Alveolar Osteitis and Adverse Drug Reaction. J Oral Maxillofac Surg. 2021 Nov;79(11):2203-2214. Azher S, Patel A.

PURPOSE: To execute an evidence-based review answering the following questions: "What antibiotic type and mode of delivery are most effective at reducing inflammatory complications in third molar and dental implant surgery? What are the types and rates of antibiotic-related adverse reactions in the context of third molar surgery, infective endocarditis, medication-related osteonecrosis of the jaw (MRONJ) and osteoradionecrosis (ORN)?" MATERIAL AND METHODS: We performed a comprehensive literature review of peer-reviewed studies using MEDLINE/PubMed, Cochrane, Scopus/Elsevier, Google Scholar, and Wiley online library databases. RESULTS: Twenty-five studies were reviewed for third molar surgery. Although there is some evidence that systemic antibiotics reduce inflammatory complications (infection and alveolar osteitis), routine use is not recommended for third molar surgery. For at-risk cases, a single preoperative dose of amoxicillin is preferred. Clindamycin, amoxicillin-clavulanic acid and erythromycin have a high adverse risk profile. Eight studies were reviewed for dental implant surgery. Antibiotics with dental implant placement showed little reduction in post surgery infection and minimal improvement in long-term success. A comprehensive search found limited data on antibiotic-related adverse effects in the context of infective endocarditis, MRONJ and ORN. CONCLUSIONS: A set of clinical recommendations are presented to better guide evidence-based and standardized antibiotic usage on the basis of the literature discussed in this review. This review highlights the need for further research focusing on antibiotic type and timing of delivery with adverse drug reaction as a primary outcome measure when assessing treatment outcomes and complications in dentoalveolar surgery. This will better elucidate the risks vs benefits of antibiotic in dentoalveolar surgery.

39. Is Penicillin Allergy a Risk Factor for Surgical Site Infection After Oral and Maxillofacial Surgery? J Oral Maxillofac Surg. 2022 Jan;80(1):93-100. Roistacher DM, Heller JA, Ferraro NF, August M.

    PURPOSE: The selection of perioperative antibiotics for prevention of surgical site infection (SSI) is often limited by the presence of a reported penicillin allergy. The purpose of this study was to determine if oral and maxillofacial surgery patients who report allergy to penicillin are at an increased risk of developing SSI. METHODS: A retrospective cohort study was performed of patients who underwent oral and maxillofacial surgical procedures in the operating room setting at a single institution between 2011 and 2018. The following categories of procedures were investigated: dentoalveolar, orthognathic, orthognathic with third molar extraction, pathology and reconstruction, and temporomandibular joint. The primary predictor and outcome variables were reported penicillin allergy and surgical site infection, respectively. Bivariate and multiple logistic regression analysis were performed. $P < .05$ was considered to be significant. RESULTS: The cohort was composed of 2,058 patients of which 318 (15.5%) reported allergy to penicillin. Beta-lactam antibiotics were administered less frequently to penicillin allergic patients perioperatively compared with those without penicillin allergy (7.9 vs 97.1%, $P < .001$), while clindamycin was more commonly administered (76.4 vs 2.5%, $P < .001$). Clindamycin was associated with a higher SSI rate compared with beta-lactam antibiotics (5.6 vs 1.4%, $P < .001$). Penicillin allergy was significantly associated with SSI at an adjusted odds ratio of 2.61 (95% CI 1.51 to 4.49, $P = .001$). After holding perioperative antibiotic usage equal between the 2 groups, penicillin allergy per se was no longer associated with SSI ($P = .901$), suggesting that the outcome was mediated by antibiotic selection. CONCLUSIONS: Penicillin allergy was associated with development of SSI due to receipt of non-beta-lactam antibiotics as perioperative prophylaxis. Formal allergy evaluation should be considered for patients with putative penicillin allergy.

40. Prevalence of bacteraemia following dental extraction - efficacy of the prophylactic use of amoxicillin and clindamycin. Acta Odontol Scand. 2021 Jan;79(1):25-30. Marttila E, Grönholm L, Saloniemi M, Rautemaa-Richardson R.

    OBJECTIVES: To evaluate the efficacy of single-dose antibiotic prophylaxis (AP) in the prevention of bacteraemia following tooth extractions at our clinic. MATERIAL AND METHODS: Fifty patients undergoing tooth extractions were enrolled. The need of AP was determined according to the health status and possible allergies of the patients. Blood culture samples were collected at baseline, 5 min after the first tooth extraction and 20 min after the last extraction. RESULTS: The majority (76%) received prophylactic oral amoxicillin or intravenous ampicillin (AMX/AMP) (2 g), 12% received clindamycin (CLI) (600 mg) and 12% received no prophylaxis (NO AP). All baseline blood cultures

were reported negative. The prevalence of bacteraemia was significantly higher in the CLI and NO AP groups compared to the AMX/AMP group 5 min after the first tooth extraction ($p < .0001$ and $p = .015$, respectively). Twenty minutes after the last extraction positive blood cultures were reported only for CLI ($p = .0015$) and NO AP groups. There was no significant difference in the prevalence of positive blood cultures between CLI and NO AP groups. CONCLUSIONS: Appropriately administered AMX/AMP proved its efficacy in reducing both the prevalence and duration of bacteraemia following tooth extractions whereas CLI was not effective in preventing bacteraemia following tooth extractions.

41. Clinico-statistical survey of oral antimicrobial prophylaxis and surgical site infection regarding ordinary tooth extraction and mandibular wisdom tooth extraction in the dental outpatient clinic. J Infect Chemother. 2021 Feb;27(2):192-197. Yoshida K, Kodama Y, Nagai T, Estacio Salazar AR, Kaneko S, Saito C, Toyama A, Takagi R.

    INTRODUCTION: We investigated the use of oral antibiotics (OA) and surgical site infection (SSI) related to extractions of ordinary teeth and mandibular wisdom teeth in a dental outpatient clinic from January 2015 to December 2019. METHODS: The following information were surveyed: (1) presence/absence of OA, (2) timing, (3) type, (4) administration period, and (5) SSI rates. RESULTS: The use of OA during ordinary tooth extraction decreased from 68.3% to 41.3%, but SSI rate did not change during this period of time. Total SSI rate was 0.8% (122/14,832) on average. For mandibular wisdom tooth extraction, preoperative administration of third-generation cephalosporins decreased from 70.4% to 0.3% while that of penicillin (AMPC) increased from 0% to 98%. SSI rate was not changed after these improvements. Total SSI rate was 3.5% (180/5106) on average. The duration of OA was slightly decreased to two days in 2018 and 2019, and it was found that there was no significant difference in SSI rates between 2- and 3-day durations. Preoperative administration had 0.37 odds ratio (OR) (95% confidence interval (95%CI): 0.22-0.63) of SSI compared with postoperative administration. AMPC had 0.76 OR (95% CI: 0.55-1.04) of SSI compared with Third-generation cephalosporins and others. Timing of OA was $P < 0.01$. CONCLUSIONS: SSI rates did not change over time, administration period of OA decreased and the use of AMPC increased. Therefore, it seems necessary to continue to investigate the effects of SSI risk factors proactively in the future and to make efforts in the advocacy of appropriate antimicrobial use.

Oral Surgery/Endodontics

42. Evolution of endodontic medicine: a critical narrative review of the interrelationship between endodontics and systemic pathological conditions. Odontology. 2021 Oct;109(4):741-769. Cintra LTA, Gomes MS, da Silva CC, Faria FD, Benetti F, Cosme-Silva L, Samuel RO, Pinheiro TN, Estrela C, González AC, Segura-Egea JJ.

    Endodontics has gained emphasis in the scientific community in recent years due to the increase in clinical and in animal models studies focused on endodontic medicine, which aims to evaluate the interrelationship between systemic and periapical tissues pathological conditions. These studies have shown that systemic changes can boost the pathogenesis of endodontic infection, favoring its development and progression. A contrary relationship is reported in numerous studies that affirm the potential of endodontic infection to trigger systemic damage and may lead to the worsening of pre-existing pathologies. Recently, the potential of filling materials to develop systemic changes such as neurological alterations had been evaluated, also showing that systemic diseases can negatively influence tissue responses to filling materials after endodontic treatment. Despite advances in endodontic medicine studies, there are still gaps in knowledge on the mechanisms of interactions between apical periodontitis (AP) and systemic diseases and much research to be done. In this sense, this critical narrative literature review aimed to show the evolution of studies in endodontic medicine to help the endodontist to know the role of systemic diseases in the pathogenesis of AP and the possible interference in the repair of periapical tissues after endodontic treatment, as well as to evidence the systemic complications that can be triggered or aggravated in the presence of endodontic infection.

43. Oral Surgery in Patients With Sturge-Weber Syndrome. J Craniofac Surg. 2021 Jan-Feb 01;32(1):e85-e88. Carvalho VA(1), Dallazen E(1), Statkievicz C(1), da Rosa DF(1), Stabile GAV(2), Pereira-Stabile CL(2), Iecher Borges HO(2).

    The Sturge-Weber syndrome (SSW) is a congenital neurocutaneous malformation, with angiomas involving the leptomeningea and facial skin. This syndrome is characterized by corticocerebral angiomatosis, cerebral calcifications, ocular affections, mental retardation, increased risk of stroke, counterlateral hemiplegia, and seizures. Another important feature of SSW is the flameus nevus on the face. In the oral cavity, SSW appears as hemangiomatous lesions affecting the mucous membranes and occasionally the dental pulp. Gingival hyperplasia may be present due to the use of anticonvulsant drugs. The present article reports the management of 2 female patients with Sturge-Weber syndrome who required oral surgery in regions affected by hemangiomatous lesions. In the first case, no hemostatic agents were necessary. On the other hand, the second case required the use of several hemostatic agents to control hemorrhage during surgery. Both patients recovered uneventfully without episodes of bleeding or infection.

44. Commonly used terminology in oral surgery and oral medicine: the patient's perspective [pubmed.ncbi.nlm.nih.gov] Br Dent J. 2021 Jun;230(12):823-830. doi: 10.1038/s41415-021-3073-1. Epub 2021 Jun 25. Alice Hamilton [pubmed.ncbi.nlm.nih.gov] 1 , Philip Lamey [pubmed.ncbi.nlm.nih.gov] 2 , Aman Ulhaq [pubmed.ncbi.nlm.nih.gov] 3 , Eleni Besi [pubmed.ncbi.nlm.nih.gov] 4 Comment in: How well do patients understand dental jargon? [pubmed.ncbi.nlm.nih.gov] Shah A. Br Dent J. 2021 Jul;231(1):30. doi: 10.1038/s41415-021-3241-3

    Introduction Dentistry is progressing into person-centred care and away from a paternal approach. Effective verbal and written communication are crucial to allow this collaboration; however, misunderstanding of terminology can lead to confusion, poor decision-making and poor health outcomes.Methods A voluntary questionnaire with multiple-choice and short-answer questions was given to patients attending the NHS Lothian Oral Surgery and Oral Medicine Department over two weeks; 137 were completed. Eighteen terms were assessed, including: ulcer, local anaesthetic, impacted tooth, radiograph, sedation, biopsy, mucosa and benign. Exclusion criteria were non-English speakers who required a translator.Results The multiple-choice questions revealed that terms such as 'blister' and 'local anaesthetic' are relatively well understood. Other terms, such as mucosa, were poorly understood. Over a third of patients confused 'sedation' with general anaesthetic. Short-answer questions revealed a wide range of answers. 'Biopsy' and 'radiograph' were generally better understood compared to other terms. Demographics, educational background and English as a first language appeared to have an influence on understanding.Conclusion Patients had a varied understanding of terminology. Incorrect interpretation of words may lead to ill-informed decision-making or unnecessary concern. It is essential that challenging terminology is identified and explained at an understandable level.

Medical Management

45. Dose-dependent association between xerostomia and number of medications among older adults. Spec Care Dentist. 2022 May;42(3):225-231. Storbeck T(1), Qian F(1), Marek C(2), Caplan D(3), Marchini L(3).

    PURPOSE/AIM: To investigate factors associated with self-reported dry mouth (xerostomia) among older adults seeking dental care at a University clinic. MATERIALS AND METHODS: A query was performed in the electronic records database and de-identified data were collected from patients aged 65 + recorded on the date that the initial health history was entered. Among these patients, data about patients' medications, gender, age, BMI, tobacco use, alcohol addiction, diabetes, heart disease, joint replacement, allergies to medications, hypertension, and mental disorders were obtained. Evaluation of potential risk factors for dry mouth was performed using univariate and multivariable logistic regression analyzes (alpha = 0.05). RESULTS: A total of 11,061 subjects were included in the analysis, 51.5% of whom were women. The mean age in years was 74.2 ± 7.0, the median number of medications was 7 (IQR = 4-11), and 38.5% of the participants reported dry mouth. The multivariable logistic regression analysis revealed that the odds of xerostomia for subjects who took 11 +, 7-10, or 4-6 medications were

3.34, 2.07, or 1.38 times those of subjects who had took 0-3 medications, respectively. CONCLUSION: Number of medications showed a strong and dose-dependent association with xerostomia.

46. Medical Clearance for Common Dental Procedures. Am Fam Physician. 2021 Nov 1;104(5):476-483. Herrick KR, Terrio JM, Herrick C.

    Medical consultations before dental procedures present opportunities to integrate cross-disciplinary preventive care and improve patient health. This article presents recommendations related to patients with certain medical conditions who are planning to undergo common dental procedures, such as cleanings, extractions, restorations, endodontic procedures, abscess drainage, and mucosal biopsies. Specifically, prophylactic antibiotics are not recommended for preventing prosthetic joint infections or infectious endocarditis except in certain circumstances. Anticoagulation and antiplatelet therapies typically should not be suspended for common dental treatments. Elective dental care should be avoided for six weeks after myocardial infarction or bare-metal stent placement or for six months after drug-eluting stent placement. It is important that any history of antiresorptive or antiangiogenic therapies be communicated to the dentist. Ascites is not an indication for initiating prophylactic antibiotics before dental treatment, and acetaminophen is the analgesic of choice for patients with liver dysfunction or cirrhosis who abstain from alcohol. Nephrotoxic medications should be avoided in patients with chronic kidney disease, and the consultation should include the patient's glomerular filtration rate. Although patients undergoing chemotherapy may receive routine dental care, it should be postponed when possible in those currently undergoing head and neck radiation therapy. A detailed history of head and neck radiation therapy should be provided to the dentist. Multimodal, nonnarcotic analgesia is recommended for managing acute dental pain.

47. Medical comorbidities associated with autism spectrum disorder and their impact on dental care. Gen Dent. 2021 Jan-Feb;69(1):62-68. Spivack E.

    Autism spectrum disorder is a neurodevelopmental disorder affecting communication, behavior, and socialization in a large number of children and adults. In addition to the classically considered features of autism, individuals with this disorder also often present with multiple significant medical comorbidities that affect dental treatment. This article discusses the most common of these neurologic, psychiatric, and gastrointestinal issues and explores their relevance to dental care. It is incumbent on dentists and members of the dental team to be familiar with the features and comorbidities of autism spectrum disorder and effectively use this knowledge to provide care for patients with autism.

48. Systemic medicines taken by adult special care dental patients and implications for the management of their care. Br Dent J. 2021 Jul;231(1):33-42. doi: 10.1038/s41415-021-3180-z. Epub 2021 Jul 9. Ransford N, Marnell B, Randall, Yates C, Howie G.

    Introduction Significant changes have taken place in the profile of prescription medicines being taken by the adult UK population over the last decade. The aims of this article are to review the literature to understand the overall trends and underlying factors, and then to compare this with the medication profile of a cohort of adult special care dental (SCD) patients. Materials and method Five hundred patient records were examined and retrospective data on systemic medicines being taken were obtained and classified according to the index used in the British National Formulary (BNF).Results The results revealed a high level of polypharmacy with 57% of SCD patients taking three or more medicines compared to 24% of the population in England. Antiepileptic drugs were the most frequently taken group of medicines (42%), followed by antidepressants (39.7%) and antipsychotics (37.6%). Conclusions Our results demonstrate the medical complexity of patients in this cohort and enable clinicians to increase their familiarity with the most commonly taken medicines and the tools available to manage the implications for dental care.

49. Effect of neuromuscular electrical stimulation associated with swallowing-related muscle training for post-stroke dysphagia: A protocol for systematic review and meta-analysis. Medicine (Baltimore). 2021 Mar 19;100(11):e25108. Du B, Li Y, Zhang B, Zhao W, Zhou L.

BACKGROUND: Swallowing dysfunction is a common dysfunction after stroke, and its incidence exceeds 50%. Aspiration pneumonia and malnutrition induced by dysphagia not only cause psychological shock to patients after stroke, but also burden the medical payment. Neuromuscular electrical stimulation, which stimulates the cortex and cortical bulb pathways to improve swallowing function, has been one of the emerging treatments for the post-stroke deglutition disorder. These therapy operators require the proficiency in professional knowledge, limiting clinical large sample studies, so there is an absence of evidence-based medicine. The research is to evaluate the effectiveness of neuromuscular electrical stimulations combined with swallowing-related muscle training to treat swallowing dysfunction after stroke. METHODS: Computer retrieval performed in the 9 databases, including PubMed, Embase, Web of science, Cochrane Library, ClinicalTrials, China Biomedical Literature Database (CBM), China Knowledge Network Database (CNKI), Wanfang Database (WanFang), and China VIP Database (VIP). Taking the published literature from the establishment of the database until December 20, 2020. Literature searching is related to neuromuscular electrical stimulation randomized controlled trials on the effect of swallowing in stroke. In addition, we will do the manual search in Baidu Academic and Google Academic database as a supplementary search. The correlative randomized controlled clinical studies retrieval time range from the establishment of the database to December 20, 2020. Two investigators will screen the literature according to the inclusion and exclusion criteria independently, during that period they will evaluate the quality of the included studies and extract data from studies. The extracted data are dichotomous data will be represented by relative risk, continuous data will be represented by mean difference or standard mean deviation. If there exists heterogeneity and the final data summary analysis select random effect model. On the contrary, the fixed effect model is selected. Then, RevMan5.3 software was used when analyzing included literature. Meanwhile, the analysis results were illustrated by drawing. RESULTS: This review will summarize available trials aimed at providing a comprehensive estimation of effectiveness of neuromuscular electrical stimulation associated with swallowing muscle training for post-stroke dysphagia. CONCLUSION: This review based on a comprehensive analysis of currently published randomized controlled trials on post-stroke dysphagia, that provide reliable evidence-based medicine evidence for the efficacy of neuromuscular electrical stimulation associated with swallowing rehabilitation training. REGISTRATION NUMBER: INPLASY202110009.

Facilitation Techniques

50. Dealing with Anxious Patients: A Systematic Review of the Literature on Nonpharmaceutical Interventions to Reduce Anxiety in Patients Undergoing Medical or Dental Procedures. J Altern Complement Med. 2021 Sep;27(9):717-726. Weisfeld CC, Turner JA, Dunleavy K, Ko A, Bowen JI, Roelk B, Eissa R, Benfield E, Robertson K.

    Objectives: State (situational) anxiety can create suboptimal outcomes for patients across a variety of health care specializations. While anxiolytic medications reduce anxiety, problematic side effects can compromise outcomes. These challenges have spurred searches for nonpharmaceutical approaches to alleviate patient anxiety. This systematic literature review, largely following Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines, aimed to determine patterns and effectiveness of interventions across medical health care specialty areas, including dentistry. Methods: A systematic review was conducted, using PubMed, CINAHL, and PsycINFO databases, with search terms related to anxiety, specific interventions, and medical or dental procedures. Hand searching for additional citations was performed on the bibliographies of dissertations, meta-analyses, and systematic reviews that met article inclusion criteria. The search process yielded 48,324 articles and 257 dissertations published in English between 1974 and 2018. Each abstract was evaluated for inclusion by two reviewers, yielding 718 articles that were read and evaluated for outcomes, risk of bias, pretest and post-test, controls and quality, using a Critical Appraisal Skills Programme instrument. Of these, 408 articles, describing 501 experimental trials, were accepted for inclusion in this analysis. Results: A total of 50,343 patients were included in these experiments, with an overall success rate of 71% for reducing patient anxiety. Results are summarized by health care specialty area: surgery, oncology, cardiology, obstetrics/gynecology, dentistry, and pain/trauma, and the following diagnostic testing and intervention areas: imaging, colonoscopy, mechanical ventilation, and other.

The largest number of experiments (114) was in the surgery category. The types of interventions included music, education, relaxation, cognitive behavioral therapy (CBT), massage, distraction, hypnosis, acupuncture/acupressure, social support, aromatherapy, nature sounds, natural visual stimuli, special garment, and other. The largest numbers of experiments were done with music (143) and education (130). Discussion: The following interventions were most successful, reducing anxiety in over 70% of experiments: music, CBT, relaxation, massage, acupuncture/acupressure, hypnosis, and natural sounds. Confidence in results is limited by publication bias, small sample sizes, and the lack of placebo controls. Directions for future research are discussed.

51. Fingerprints as an index for investigating cooperation by children in dentistry: a pilot study. Eur Arch Paediatr Dent. 2021 Apr;22(2):203-207. Mokhtari S, Mokhtari S, Salehi Shahrabi M.

    Behavioral management and patient cooperation are very important in pediatric dentistry. Some studies have indicated that individual behavior can vary in terms of fingerprint patterns (loop, whorl, and arch). Therefore, fingerprint patterns might help to predict the extent of cooperation by children during dental procedures. The present study aimed to investigate the possible relationship between fingerprint patterns and cooperation by children. In this pilot investigation, 51 children aged 3-6 years were examined. The children meeting the inclusion criteria in the first visit were scheduled for a dental procedure in the second visit. Another examiner assessed children's behavior during the dental procedure according to the designed questionnaire and based on the Frankl scale. A third examiner, along with the second examiner, randomly evaluated the children's behavior to determine the inter-examiner agreement. The subjects were categorized as cooperative or uncooperative during dental procedures, according to the Frankel questionnaire. The fingerprints of all subjects were recorded, and the data were compared with SPSS 21 using the chi-squared test at a significance level of $P < 0.05$. The uncooperative and cooperative groups consisted of 20 and 31 children, respectively. The main fingerprint pattern in the uncooperative children was the whorl; while in the cooperative group, it was the loop. This difference in the fingerprint effect was significant between the groups ($P = 0.01$). The arch type exhibited the minimum frequency and was not significantly different between the groups. The current findings revealed a relationship between fingerprint type and children's behavior during dental treatment.

52. Comparison of two behavior management techniques used during mandibular block anesthesia among preschool children: a randomized clinical trial. Eur Arch Paediatr Dent. 2021 Oct;22(5):773-781. Vidigal EA, Abanto J, Leyda AM, Berti GO, Aillón IEV, Corrêa MSNP, Bönecker M.

    PURPOSE: To compare the Tell-Show-Do Technique (TSD-T) with Hiding Dental-Needle Technique (HDN-T) based on children's anxiety, pain, and behavior during first-time mandibular block anesthesia. METHODS: A total of 52 children aged 3-5 years who had never received dental anesthesia and had at least one mandibular primary molar requiring extraction or pulpal therapy were included in the study. Children were randomly allocated into two groups: G1: TSD-T ($n = 26$) and G2: HDN-T ($n = 26$). This study included two sessions: intervention session (baseline) and control session (7 days after intervention). Facial Image Scale and Wong-Baker Pain Scale were used to evaluate anxiety and pain levels, respectively. Frankl Behavior Scale was used to assess children's behavior. RESULTS: Anxiety and pain levels were not statistically significant between G1 and G2 groups ($p > 0.05$). Similar results were observed for children's behavior rating ($p > 0.05$). Higher pain level was associated with younger children (rate ratios (RR) = 0.41; $p = 0.016$) and negative behavior (RR = 1.11; $p < 0.001$). On the other hand, in within-groups comparisons, there was a statistical difference in anxiety levels between intervention session and control session ($p = 0.032$) in G2. CONCLUSIONS: Even though there are no differences in the efficacy of TSD-T compared to HDN-T during first-time mandibular block anesthesia in preschool children in terms of children's anxiety, pain, and behavior, children from the HDN-T group can show reduced dental anxiety levels in the control sessions.

53. Effects of music listening to reduce preprocedural dental anxiety in special needs patients. Complement Ther Clin Pract. 2021 Feb;42:101279. doi: 10.1016/j.ctcp.2020.101279. Epub 2020 Nov 25. Chen Y, Hawkins J.

BACKGROUND AND PURPOSE: Dental anxiety is particularly problematic for individuals with Intellectual and Developmental Disabilities (IDD), resulting in a greater reluctance to undergo dental procedures and exacerbating poor oral health. Drugs commonly used for dental anxiety have undesirable side effects and may not be preferred by patients and guardians. Alternative methods for managing dental anxiety are needed. The purpose of this study was to evaluate the effects of music listening on anxiety levels of patients with IDD awaiting dental procedures. MATERIALS AND METHODS: A convenience sample of 15 patients with IDD listened to piano music for 10 min before scheduled outpatient dental procedures. Preprocedural dental anxiety levels as measured by Revised ADAMS scores, pulse rates, and blood pressures were compared pre and post music listening. Participants' premedication requirements for the procedure with music listening was compared to their respective previously scheduled procedure with no music listening. RESULTS: Post music listening, patients demonstrated reduced anxiety levels as evidenced by lower Revised ADAMS scores ($p = 0.001$), mean arterial pressures ($p = 0.09$), pulse rates ($p = 0.02$), and reduced premedication requirements. CONCLUSION: Study results suggest that music listening offers an effective, nonpharmacologic alternative to reducing preprocedural dental anxiety in patients with IDD.

54. Comparative evaluation of effect of two relaxation breathing exercises on anxiety during buccal infiltration anesthesia in children aged 6-12 years: A randomized clinical study. J Indian Soc Pedod Prev Dent. 2021 Jul-Sep;39(3):284-290. Bargale S, Khandelwal JR, Dave BH, Deshpande AN, Shah SS, Chari DN.

    BACKGROUND: Dental procedures, especially local anesthetic administration, are a source of great anxiety to children. Diaphragmatic breathing is defined as an efficient integrative body-mind training for dealing with stress and psychosomatic conditions. Pinwheel exercise is also a highly effective technique of "play therapy." AIM: This study aimed to compare dental anxiety using pinwheel breathing exercise and diaphragmatic breathing exercise during buccal infiltration anesthesia. METHODOLOGY: Sixty children in the age group of 6-12 years with Frankel's behavior rating score of 3 who required buccal infiltration local anesthesia were selected. Subjects were divided randomly into two groups, i.e., Group A: children who performed pinwheel breathing exercise and Group B: children who performed diaphragmatic breathing exercise. The level of anxiety of the patients was recorded using an animated emoji scale. The data were analyzed using IBM SPSS version 20 software with paired t-test and Chi-square test. RESULTS: There was a significant reduction in dental anxiety score from score 1 (before the anesthetic procedure) to score 2 (after the anesthetic procedure) in both the groups. On intergroup analysis, children who performed pinwheel breathing exercise (Group A) showed higher values than children who performed deep breathing exercise without pinwheel (Group B) with a t value of 1.42 but was not statistically significant with a P value of 0.161. CONCLUSION: Pinwheel breathing exercise as well as diaphragmatic breathing exercise proved to be significantly effective in reducing dental anxiety during local anesthesia.

55. Is Visual Pedagogy Effective in Improving Cooperation Towards Oral Hygiene and Dental Care in Children with Autism Spectrum Disorder? A Systematic Review and Meta-Analysis. Int J Environ Res Public Health. 2021 Jan 18;18(2):789. Balian A, Cirio S, Salerno C, Wolf TG, Campus G, Cagetti MG.

    Visual pedagogy has emerged as a new approach in improving dental care in children with autism spectrum disorders (ASDs). This paper aimed to evaluate and assess the scientific evidence on the use of visual pedagogy in improving oral hygiene skills and cooperation during dental care in children with ASDs. The review protocol was registered on the PROSPERO Register (CRD42020183030). Prospective clinical studies, randomized trials, interruptive case series, before and after comparison studies, and cross-sectional studies following the PRISMA guideline were searched in PubMed, Embase, Scopus, and Google Scholar using ad hoc prepared search strings. The search identified 379 papers, of which 342 were excluded after title and abstract evaluation, and 37 full-text papers were analyzed. An additional four papers were added after consulting reference lists. Eighteen papers were disregarded; 23 were finally included, and their potential bias was assessed using ROB-2 and ROBINS-I tools. The wide heterogenicity of the studies included does not allow for conclusive evidence on the effectiveness of visual pedagogy in oral hygiene skills and dental care. Nevertheless, a significant and unilateral tendency of the overall outcomes was found, suggesting that visual pedagogy supports ASD children in improving both oral hygiene skills and cooperation during dental care.

56. Asystole Triggered by the Mouth Opening With a Dental Mouth Gag Under General Anesthesia During Pediatric Oral Surgery: Report of a Rare Case. J Oral Maxillofac Surg. 2021 Sep;79(9):1862-1865. doi: 10.1016/j.joms.2021.03.016. Epub 2021 Mar 26. Hoshijima H, Takeuchi R, Kikuchi K, Mizuta K.

    The trigeminovagal reflex manifests as a sudden onset of bradycardia, hypotension, and cardiac arrest in response to the stimulation of the trigeminal nerve. The incidence of trigeminovagal reflex in maxillofacial surgical procedures is approximately 1.6%. We report a case of asystole in a pediatric patient in whom a dental mouth gag triggered the trigeminovagal reflex during oral surgery. The patient was a 5-year-old boy who was scheduled to undergo extraction of maxillary supernumerary teeth. After tracheal intubation, anesthesia was maintained with sevoflurane and remifentanil. At the beginning of the surgery, his mouth was opened with a dental mouth gag, and electrocardigram showed asystole for 20 seconds. Thereafter, his heart rate spontaneously returned to basal value within 60 seconds. Since sufficient mouth opening was required to conduct the surgery, his mouth was opened again with the gag. When the interincisal distance exceeded about 40 mm, his heart rate suddenly decreased, but spontaneously returned to baseline within 60 second. The subsequent anesthetic course was uneventful.

57. Protective stabilization in pediatric dentistry: A qualitative study on the perceptions of mothers, psychologists, and pediatric dentists. Int J Paediatr Dent. 2021 Sep;31(5):647-656. Ilha MC, Feldens CA, Razera J, Vivian AG, de Rosa Barros Coelho EM, Kramer PF.

    BACKGROUND: Evidence regarding the feelings evoked, distress caused, and the best way to conduct protective stabilization for the management of young children is lacking. AIM: Describe the perceptions of mothers, psychologists, and pediatric dentists regarding the use of protective stabilization during the dental care of children up to three years of age attending a University Dental Clinic in southern Brazil. DESIGN: After watching a video of dental care involving the protective stabilization technique, individualized qualitative interviews were held with three groups [mothers (n = 5), psychologists (n = 7), and pediatric dentists (n = 4)] to investigate four categories of interest: importance of the technique, affective attitude, distress caused to the child, and participation of parents. After the transcription of the recorded comments, qualitative content analysis was performed. RESULTS: Protective stabilization generated emotional discomfort but was well accepted by all groups. All expressed the need to create a bond between the dentist and caregiver; and the active participation of the caregiver was considered fundamental. The mothers and psychologists rejected other options, such as passive restraint, general anesthesia, and sedation. CONCLUSION: The three groups admitted having negative feelings, recognized the importance of protective stabilization, and suggested conditions for its use.

58. Restraint in paediatric dentistry: a qualitative study to explore perspectives among public, non-specialist dentists in Norway. Acta Odontol Scand. 2021 Aug;79(6):443-450. Aarvik RS, Agdal ML, Svendsen EJ.

    OBJECTIVE: The aim of this study was to explore the perspectives of non-specialist dentists on the use of restraint in paediatric dentistry in the Public Dental Service in Norway. MATERIALS AND METHOD: Two focus group interviews involving four and five dentists, respectively, were conducted in one of the most populated counties in Norway in September 2019. The thematic analysis by Braun and Clarke informed the qualitative analysis. RESULTS: According to the dentists, physical restraint in paediatric dentistry is usually used when dental treatment is absolutely necessary. The qualitative analysis revealed the following three main themes: (1) some dentists justify the use of restraint in paediatric dentistry; (2) physical restraint is often legitimised by the fact that the child is sedated; (3) the use of restraint evokes difficult ethical evaluations. Additionally, the dentists had an overarching perspective of acting in the child's best interest, but they sometimes struggled to find a justifiable path in situations involving restraint. CONCLUSIONS: Dentists seem to consider the use of restraint combined with sedation as legitimate for absolute necessary dental treatment. Furthermore, the use of restraint involves difficult ethical evaluations.

59. Treatment Plan and Challenges in Full-Mouth Rehabilitation of a Quadriplegic Patient: A Clinical Report. J Prosthodont. 2022 Mar;31(3):183-189. doi: Auerbacher M, Kakoschke TK, Hickel R, Kaisarly D.

Spinal cord injuries lead to physical limitations, and the resulting levels of dependency and emotional distress have devastating consequences on individuals' oral health. A 46-year-old patient with incomplete quadriplegia due to a complicated medical history presented for prosthetic rehabilitation. The patient's ability and tolerance to be treated in the dental chair was assessed. Prosthetic treatment options were discussed considering his dependency on alternating caregivers. The final treatment plan involved restorative treatment, implant-supported crowns, an implant-supported fixed dental prosthesis and, in the upper jaw, an implant-supported overdenture to allow proper oral hygiene. The dental treatment sessions were performed with frequent interruptions in the dental chair, whereas the implants were placed under general anesthesia in the maxillo-facial surgery department. The final treatment plan resulted in a compromise between the prosthetic recommendation and the patient's wish. The decisive factor for choosing an implant-supported overdenture rather than an implant-supported fixed dental prosthesis in the upper jaw was the inability of the patient to maintain adequate hygiene measures by himself and his dependence on the caregivers. This clinical report demonstrates how special care dentistry can improve quality of life, even in people with severe physical and/or mental impairments. We would like to encourage dental professionals to provide high-quality care for patients with disabilities in particular, and this practice is in line with the requirements of the UN convention on the rights of persons with disabilities.

60. Patient-related and anesthesia-dependent determinants for postoperative delirium after oral and maxillofacial surgery. Results from a register-based case-control study. J Stomatol Oral Maxillofac Surg. 2021 Feb;122(1):62-69. Ortner F, Eberl M, Otto S, Wang B, Schauberger G, Hofmann-Kiefer K, Saller T.

    OBJECTIVE: To identify risk factors for postoperative delirium (POD) after general oral and maxillofacial surgery. MATERIAL AND METHODS: 2420 patients were screened postoperatively for POD using the Nursing Delirium Screening Scale (NuDESC) before discharge from the post anesthesia caring unit (PACU). Basic health data and risk factors were collected. For analysis the study group (n=41) was compared to a control group of 164 randomly selected patients (case-control-ratio=1:4). To identify risk factors for POD multivariable logistic regression models were used. To see whether estimations remain stable, regression analysis was repeated for the subgroup of patients not undergoing dentoalveolar surgery (n=105). To estimate the risk for dentoalveolar surgery a logistic regression model was performed. RESULTS: Dementia was the only significant risk factor for POD (Odds ratio 41.5; 95% CI 5.48-314), also for patients undergoing other than dentoalveolar surgery (58.1; 1.70-1983). Patients undergoing dentoalveolar surgery were more often suffering from dementia (35.5; 2.85-441), other psychiatric and neurological disorders (3.15; 1.05-9.43), were of younger age (0.97; 0.94-1.00) and had higher anesthesiological risk (3.95; 1.04-14.9). CONCLUSION: Patients with dementia are at higher risk to develop POD after oral and maxillofacial surgery. We found a strong interdependence between age, dementia, ASA-Score and dentoalveolar surgery.

61. Survival of direct composite restorations placed under general anesthesia in adult patients with intellectual and/or physical disabilities. Clin Oral Investig. 2021 Jul;25(7):4563-4569. Maes MS, Kanzow P, Hrasky V, Wiegand A.

    OBJECTIVES: This study aimed to assess the survival of direct composite restorations placed under general anesthesia in adult patients with intellectual and/or physical disabilities. MATERIALS AND METHODS: Survival of composite restorations placed under general anesthesia in adult patients with intellectual and/or physical disabilities was retrospectively analyzed. Failure was defined as the need for replacement of at least one surface of the original restoration or extraction of the tooth. Individual-, tooth-, and restoration-related factors were obtained from dental records. Five-year mean annual failure rate (mAFR) and median survival time were calculated (Kaplan-Meier statistics). The effect of potential risk factors on failure was tested using univariate log-rank tests and multivariate Cox-regression analysis ($\alpha = 5\%$). RESULTS: A total of 728 restorations in 101 patients were included in the analysis. The survival after 5 years amounted to 67.7% (5-year mAFR: 7.5%) and median survival time to 7.9 years. Results of the multivariate Cox-regression analysis revealed physical disability (HR: 50.932, $p = 0.001$) and combined intellectual/physical disability (HR: 3.145, $p = 0.016$) compared with intellectual disability only, presence of a removable partial denture (HR: 3.013, $p < 0.001$), and restorations in incisors (HR: 2.281, $p = 0.013$) or molars (HR: 1.693, $p = 0.017$) compared with premolars to increase the risk for failure. CONCLUSION: Composite

restorations placed under general anesthesia in adult patients with intellectual and/or physical disabilities showed a reasonable longevity as 67.7% survived at least 5 years. CLINICAL RELEVANCE: Survival of composite restorations depends on risk factors that need to be considered when planning restorative treatment in patients with intellectual and/or physical disabilities. NCT04407520.

62. Dental management of a 26-year-old female with fibrodysplasia ossificans progressiva: A case report [pubmed.ncbi.nlm.nih.gov] Spec Care Dentist. 2022 Mar;42(2):194-199. doi: 10.1111/scd.12649. Epub 2021 Sep 23. Benjamin Hietanen [pubmed.ncbi.nlm.nih.gov] 1 , Maureen Sullivan [pubmed.ncbi.nlm.nih.gov] 2 , Jennifer Frustino [pubmed.ncbi.nlm.nih.gov] 3 , Shawn Cantie [pubmed.ncbi.nlm.nih.gov] 1 , Elizabeth Kapral [pubmed.ncbi.nlm.nih.gov] 1

    Purpose: The purpose of the report is to present a rare case of clinical management of a 26-year-old patient with fibrodysplasia ossificans progressiva (FOP), and discuss treatment options and possible outcomes. Summary: FOP is a rare autosomal dominant genetic disorder of the connective tissue that affects one in two million people. It is characterized by multiple areas of progressive heterotopic endochondral ossifications. The symptoms typically begin with painful soft tissue swellings in the patient's first decade, which frequently occur after minor trauma, but may also happen spontaneously. The soft tissue swellings eventually form hard bony masses that cause joint limitations, growth defects, skeletal deformities, and chronic pain. The results are severely limiting to the activities of daily living and overall quality of life with the average life expectancy being 40 years of age. Medical and dental treatment, including the use of general anesthesia, may be complicated by increased risk of ossification of the soft tissues in the airway and lungs. The following case report focuses on a 26-year-old Caucasian female, with FOP. The patient presented to the Erie County Medical Center Dental clinic in Spring 2019 with generalized dental pain. She reported a history of multiple dental infections over many years which were periodically treated with antibiotics. A thorough intraoral exam and radiographs were not able to be completed upon initial presentation due to severe trismus and mobility limitations. The patient was a wheelchair user, verbal, and maintained a completely liquid diet by mouth. The patient also had a medical history significant for dysphagia and aspiration. After a substantial pre-operative optimization process, the patient was brought to the operating room for full mouth dental extractions. At the 2-week follow-up from surgery the patient showed excellent healing. Conclusion: While there are greater potential risks with placing a patient with FOP patient under general anesthesia, proper management of dental disease can relieve the patient from recurrent infections and discomfort.

63. Nitrous Oxide for Dental Procedures in Pediatric Patients with Sickle Cell Disease: A Pilot Study [pubmed.ncbi.nlm.nih.gov] Pediatr Dent. 2021 Nov 15;43(6):481-483. Brittaney Hill [pubmed.ncbi.nlm.nih.gov] 1 , Marcio A da Fonseca [pubmed.ncbi.nlm.nih.gov] 2 , Lewis L Hsu [pubmed.ncbi.nlm.nih.gov] 3

    Purpose: The purpose of this pilot study was to evaluate the safety of nitrous oxide (N_2O) during dental procedures in pediatric patients with sickle cell disease (SCD). Methods: Patients three to 15 years of age received N_2O with oxygen (N_2O:O_2) during their dental procedure in a university pediatric dental clinic between March 2019 and December 2020. Blood oxygen levels were monitored via pulse oximetry throughout the visit. Caregivers received a follow-up call to assess for postoperative complications. Results: Twenty-three patients were enrolled. The duration of N_2O sedation was 20 to 50 minutes. Oxygenation levels during ($P<0.001$) and after ($P=0.004$) the procedure were higher than for baseline. No adverse effects were reported in the three days after N_2O use. Conclusions: Following dental guidelines for sedation, treatment with up to a 50:50 mixture of nitrous oxide with oxygen increased blood oxygen levels and did not cause postoperative complications in children with sickle cell disease. This is the first formal study confirming the safety of nitrous oxide use in the dental care of SCD patients.

64. Clinical considerations in providing intravenous sedation with midazolam for obese patients in dentistry. Br Dent J. 2021 May;230(9):587-593. doi: 10.1038/s41415-021-2944-9. Epub 2021 May 14. Howie GC, Ransford N, Russell SH.

    The widespread prevalence of obesity continues to rise. Obesity and dental disease share common risk factors and so the demand for dental care for obese patients is escalating. For some of these patients, there is a corresponding need to be able to provide intravenous sedation safely when it is necessary and appropriate to do so. However,

obesity often presents with multiple comorbidities and airway complexities, leading to more challenging management and potentially increased risk. The risk assessment process as well as patient monitoring and management strategies will be explored in this article. By reviewing the literature from dentistry and other medical specialties, we also aim to establish the potential benefit in administering supplemental oxygen and the use of capnography in monitoring this cohort of patients.

65. UK Dental Medicines Advisory Service - questions asked by dentists: part 3 - prescribing of anxiolytic medications in dental practice. Br Dent J. 2021 Nov;231(9):556-561. doi: 10.1038/s41415-021-3568-9. Epub 2021 Nov 12. Finn K, Kwasnicki A, Field EA, Randall C.

    The UK Dental Medicines Advisory Service (UKDMAS) provides advice to dentists and other dental healthcare professionals concerning the use of medicines and medical devices in dentistry. The commonly asked questions posed to the UKDMAS concerning the prescribing, administering or dispensing of oral anxiolytic medicines in dental practice are discussed with answers supplemented by relevant information from clinicians. These include: types of oral anxiolytics available, prescribing guidelines, appropriate dosing regimens, indications and contraindications to prescribing and drug interactions.

66. Brief Report: Analysis of Dental Treatment Provided Under General Anaesthesia for Children and Young Adults with Autistic Spectrum Disorder and Identification of Challenges for Dental Services. J Autism Dev Disord. 2021 Dec;51(12):4698-4703. doi: 10.1007/s10803-021-04898-w. Epub 2021 Feb 8. Parry JA, Brosnan S, Newton JT, Linehan C, Ryan C.

    Dental treatment provided under general anaesthesia (DGA) is an expectation for many children and young adults (CYA) diagnosed with Autistic Spectrum Disorder (ASD). Planning and delivery of DGA requires consideration of morbidity and mortality risks and implications for families and healthcare services. One hundred patient records of CYA with special healthcare needs were analysed to examine characteristics and experience of DGA revealing that 79% of CYA had a diagnosis of ASD. Forty-seven percent of CYA diagnosed with ASD had at least one previous hospital admission for DGA. For 24% of this repeat DGA group, the previous DGA was within a two-year period. Results highlight a high rate of DGA and need to investigate more effective primary dental care strategies.

67. Dental decision-making under general anesthesia for patients with disabilities: A qualitative study. Spec Care Dentist. 2022 Jan;42(1):20-27. McGeown D, Mac Giolla Phadraig C, Whelehan D, Nunn JH.

    AIMS: This paper explores the variables which influence decision-making processes in dentists providing dental care for people with disabilities under general anesthesia (GA). METHODS: Face-to-face semi-structured interviews were undertaken on a purposive sample. Audio recordings were transcribed and checked for accuracy. Using thematic content analysis methods open codes were developed inductively. Codes were analyzed further by three authors adopting a deductive approach, leading to final coding, sorting and themes, subtheme and framework development. RESULTS: Three themes emerged. The first theme explored Shared Decision Making, or lack thereof, as it influenced clinical reasoning. The second (Systematic, Analytical) and third (Intuition, and heuristics) themes explored features of clinical judgment as considered under dual process theory. Dentists primarily used intuitive decision-making processes and heuristic styled processes (or cognitive mental frames) assisted in intuition to extract teeth, without engaging type 2 processes. CONCLUSION: The dentists experience subtle modifiers to their decision-making that ultimately promote extraction of teeth under GA for people with disabilities. Bias training, simulation and post-hoc reflection are examples of recommendations which may be used to improve decision-making in this area.

68. Risk factors for repeated general anesthesia for dental treatment of adult patients with intellectual and/or physical disabilities. Clin Oral Investig. 2022 Feb;26(2):1695-1700. doi: 10.1007/s00784-021-04142-w. Epub 2021 Aug 25. Maes MS(1), Kanzow P(1), Biermann J, Leha A, Hrasky V, Wiegand A.

    AIM: Repeated dental treatment of patients with intellectual and/or physical disabilities under general anesthesia (GA) often becomes necessary. This study aimed to identify potential risk factors predictive of repeated dental

treatment under general anesthesia. MATERIALS AND METHODS: Data of adult patients with intellectual and/or physical disabilities receiving dental treatment under GA within a time period of 7 years were analyzed (n = 203, mean age: 41.0 ± 14.9 years). All patients received comprehensive dental treatment (professional tooth cleaning, periodontal therapy, composite restorations, and/or extractions); patients receiving extractions only for emergency dental care were not included as a second intervention for restorative treatment often followed. Demographic, anamnestic, oral health, and treatment factors were obtained from dental records. Duration of intervals without dental treatment under GA was assessed using Kaplan-Meier statistics. Potential predictive factors were tested using univariate and multivariate cox regression analyses. RESULTS: Thirty-five patients (17.2%) received a second and five patients (2.5%) a third dental treatment under GA during that period. In the univariate analysis, patients' age, living situation, and nutrition were associated with repeated GA. In the multivariate Cox regression analysis, only nutrition remained significant. Risk for repeated treatment increased if patients were tube-fed (HR: 7.54, p = 0.001) or received pureed/liquid food (HR: 4.32, p = 0.007) compared to nutrition without limitation. CONCLUSION: In adult patients with intellectual and/or physical disabilities, nutrition affects the risk for repeated dental treatment under GA. CLINICAL RELEVANCE: Identification of risk factors making repeated dental treatment under GA of patients with intellectual and/or physical disabilities more likely is essential to adjust preventive measures.

69. Dental Treatment for Special Needs Patients Under General Anaesthesia: A 14-year Experience from South Bosnia and Herzegovina. Acta Med Okayama. 2021 Jun;75(3):261-268. Arapovic LL, Karlovic Z, Brzovic VR, Bukvic A, Coric A, Vukojevic K, Verzak Z.

    We conducted a retrospective analysis of records of special needs patients (SNPs) who received dental treatment under orotracheal-intubation general anaesthesia (OIGA) at Caritas Centre St. Family in Mostar, Bosnia and Herzegovina during the 14-year period from January 2005 to December 2018. Of the 7,085 SNPs who received dental treatment, 1,220 (17.2%) received dental treatment under OIGA: 829 (67.9%) males and 391 (32.1%) females. The patients' mean age was 18.3±10.9 years (747 paediatric and 473 adult patients). Mental retardation and psychiatric problems were the most common medical conditions (81.22%). The most common indication for dental treatment under OIGA was behaviour management (87.21%), and 81% of the patients had an urgent need for treatment. Many of the patients had restorative treatment (3,833) and tooth extractions (3,681). From 2011 onwards, the number of tooth extractions decreased significantly. Annual trends revealed a rapid increase of patients every year. The mean dental treatment duration was 95.3±12.1 min; the mean time under OIGA was 98±8.5 min. No serious adverse effects occurred. There was increase of annual trend of SNP in OIGA. The number of extractions decreased while the number of preventive and restorative dental treatments increased.

70. Impact of Follow-Up Visit Timing Recommendations After Dental Rehabilitation Under General Anesthesia [pubmed.ncbi.nlm.nih.gov] Pediatr Dent. 2021 Nov 15;43(6):470-474. Stacy Michels [pubmed.ncbi.nlm.nih.gov] 1 , Naveen Bansal [pubmed.ncbi.nlm.nih.gov] 2 , Colleen Greene [pubmed.ncbi.nlm.nih.gov] 3

    Purpose: Dental rehabilitation under general anesthesia (DRGA) is performed increasingly by pediatric dentists. Follow-up visits and ongoing recall attendance are shown to be low post-DRGA. There is currently no guideline or published study on optimal DRGA follow-up timing recommendations. A quality improvement initiative was performed at Children's Dental Center of Children's Wisconsin to increase the rate of follow-up post-DRGA. The purpose of this study was to evaluate changes in follow-up compliance after implementing a two-week visit recommendation instead of a six-week interval for dental rehabilitation under general anesthesia follow-up. Methods: The DRGA follow-up visit recommendation was changed from six weeks to two weeks postsurgery. Attendance rates for recall exams were evaluated before and after implementation with 17 months follow-up (n equals 544). Attendance was then compared by age, special health care needs, foster care status, and caries recurrence. Results: The intervention improved compliance with DRGA follow-up for all ages (P<0.001) and six-month recall visits for ages zero to five (83.3 percent of cases, P=0.001). Patients were more likely to return for any visit within 17 months in the two-week follow-up group compared to the six-week group (P=0.002). There was no difference in caries recurrence requiring treatment between the two follow-up timing groups (P=0.86). Conclusion:

Changing the dental rehabilitation under general anesthesia follow-up from six weeks to two weeks improved compliance through six months and decreased the overall number of patients lost to follow-up.

71. Comparison of Failed and Kept General Anesthesia Appointments in a Pediatric Dental Clinic [pubmed.ncbi.nlm.nih.gov] J Dent Child (Chic). 2021 Sep 15;88(3):173-179. Jasmine Butler [pubmed.ncbi.nlm.nih.gov] 1 , Kecia Leary [pubmed.ncbi.nlm.nih.gov] 2 , Fang Qian [pubmed.ncbi.nlm.nih.gov] 3 , Amy Lesch [pubmed.ncbi.nlm.nih.gov] 4

    Purpose: To evaluate reasons pediatric dental patients missed appointments associated with general anesthesia (GA) or monitored anesthesia care (MAC).
Methods: Data were collected using a retrospective review of 518 charts of patients with appointments at a university pediatric dental clinic between January 1, 2018 and April 30, 2019. The information obtained included patient demographics and reasons for failing appointments. Statistical analyses included descriptive and bivariate analyses (alpha=0.05).
Results: A total of 518 patients were included in the study. There were 86 failed appointments (age=7.6±5.8 [standard deviation; {SD}] years; 64 percent males) and 432 kept appointments (age=8.4±7.0 [SD] years; 61.6 percent males), were included in the study. Among those patients who failed appointments, 82.6 percent had public aid (Medicaid) coverage and 47.7 percent had special health care needs (SHCN). For those who kept appointments, 80.8 percent had Medicaid coverage and 55.8 percent had SHCN. The most common reason for failed appointments was "child illness." Patients seen for emergency care between consultation and the surgery visit were more likely to fail appointments than those who were not seen for emergency care (33.3 percent versus 12.7 percent; P =0.001). Additionally, the mean/median days, respectively, between consultation and surgery for patients who missed appointments were significantly higher than for patients who kept appointments (107.5/91 days versus 75.6/58 days; P <0.001).
Conclusion: Significant differences were found between patients who failed their appointments and those who kept them.

Silver Diamine Fluoride

72. "I guess it looks worse to me, it doesn't look like there's been a problem solved but obviously there is": a qualitative exploration of children's and their parents' views of silver diamine fluoride for the management of carious lesions in children. BMC Oral Health. 2021 Jul 23;21(1):367. doi: 10.1186/s12903-021-01730-w. Seifo N, Cassie H, Radford JR, Innes NPT.

    BACKGROUND: Despite growing evidence to support the use of silver diamine fluoride (SDF) for managing carious lesions, and the increased interest in SDF worldwide, uptake in the UK remains limited. This study explored parents' and children's views and acceptability of SDF for the management of carious lesions in children. METHODS: Eleven semi-structured face-to-face interviews were conducted with 11 parent-child dyads recruited from patients attending Dundee Dental Hospital and School. Interviews were transcribed verbatim, coded and thematically analysed. RESULTS: Previous dental experience varied across all child participants. Of the 11 children, five had undergone general anaesthesia (GA) for multiple primary tooth extractions. Two had received SDF treatment. Child participants expressed concerns about being picked on by their peers, if they had discoloured anterior teeth. Younger children appeared less concerned about the discolouration and child's gender did not appear to influence parents' decision-making, nor the child's preferences regarding the use of SDF. Parents considered SDF to be particularly useful for anxious or uncooperative children but raised concerns about potential bullying at schools due to the unacceptable dental aesthetics when SDF is applied to anterior teeth. They believed they may be judged by others as neglecting their child's oral health due to the black staining. Both parents and children were more accepting of the SDF when applied to less-visible posterior teeth. Parents accepted the use of SDF if such treatment avoided extractions under GA. CONCLUSION: Despite the unfavourable aesthetics of SDF (black staining), parents appreciated SDF treatment, especially for uncooperative or younger children. However, both parents and children shared concerns about bullying at schools as a consequence of the black staining. Raising awareness about SDF was identified as one approach to encourage the uptake of SDF.

73. The effect of the combined use of silver diamine fluoride and potassium iodide in disrupting the plaque biofilm microbiome and alleviating tooth discoloration: A systematic review. PLoS One. 2021 Jun 11;16(6):e0252734. Haiat A, Ngo HC, Samaranayake LP, Fakhruddin KS.

    Silver diamine fluoride (SDF) is used in minimally invasive dentistry for arresting dental caries. However, discoloration of teeth is a significant side effect that has limited the use of SDF. Hence, the application of potassium iodide (KI) following SDF has been proposed to ameliorate the staining. Although antimicrobial activity is one of the major mechanisms of the caries-arresting effect of SDF, the antimicrobial potency of SDF/KI combination is unclear. Thus, the primary objective of this systematic review was to appraise the studies on the antimicrobial efficacy of SDF/KI combination on cariogenic microbes. The secondary objective was to summarize the evidence on the potential of KI in reducing the discoloration associated with the application of SDF. Electronic databases of Medline via PubMed, Cochrane Library, Web of Science, and EBSCO host were searched for English language manuscripts from January 2005 to 15th November 2020. The reference lists of these manuscripts were manually searched for additional studies. Twelve studies were included in the final analysis, seven of which have investigated the antimicrobial efficacy of SDF/KI, and the rest have examined the anti-staining potential of KI. The exploratory findings from the reviewed articles revealed the promising antimicrobial potential of SDF/KI on cariogenic microbes associated with dentine caries. There is, however, contradictory evidence on the effect of SDF/KI on tooth color. The reviewed in-vitro studies indicated significant effectiveness of KI in preventing staining. A clinical trial on primary dentition showed 25% reduction in the incidence of staining by SDF after applying KI, while a clinical study on root caries in adults showed no significant effect. Within the methodological limitations of this review, we conclude that for arresting dental caries, SDF could be combined with KI, as there may be a lower likelihood of staining. Further, well-designed clinical trials on the antimicrobial and anti-staining effect of SDF/KI are needed to obtain more robust evidence.

74. Evaluation of the Use of Potassium Iodide Application on Stained Demineralized Dentin Under Resin Composite Following Silver Diamine Fluoride Application. Pediatr Dent. 2021 Jan 15;43(1):57-61. Fröhlich TT, Gindri LD, Pedrotti D, Cavalheiro CP, Soares FZM, Rocha RO.

    Purpose: The purpose of this study was to assess the effect of potassium iodide (KI) after applying silver diamine fluoride (SDF) on the staining of demineralized dentin covered or not by a composite resin layer. Methods: Dentin blocks from 30 bovine incisors were demineralized and randomly allocated in three groups (N equals 10): (1) control (no treatment); (2) treated with SDF; and (3) treated with SDF and KI. Half of the specimens of each group received a composite resin restoration immediately after treatment. A colorimetric evaluation, according to the CIE L*a*b* system, was performed at baseline and after seven, 14, 30, and 60 days. The ΔE data were analyzed using the generalized linear model (Δ equals 0.05). Results: The use of KI immediately after applying SDF decreased the dentin staining at all assessment times. SDF treatment only stained the dentin under composite resin after 60 days. The application of KI reduced the dentin under composite resin staining as ΔE values were similar to the control group even after 60 days. Conclusions: The use of potassium iodide minimizes the darkening of dentin and prevents the staining of the dentin under composite resin restorations in the long-term.

75. Caries arrest effectiveness of silver diamine fluoride compared to alternative restorative technique: randomized clinical trial. Eur Arch Paediatr Dent. 2021 Aug;22(4):575-585. Abdellatif HM, Ali AM, Baghdady SI, ElKateb MA.

    OBJECTIVE: This RCT study assessed and compared the effect of a biannual application of 38% silver diamine fluoride (SDF) with alternative restorative technique (ART) on arresting caries in primary dentition. METHODS: The RCT was conducted over a period of 12 months and included 79 healthy children (237 primary teeth), aged 3-8 years, selected from the University Pediatric Dentistry outpatient clinics, with at least one primary asymptomatic tooth with active dentinal occlusal/labial lesions. Children were randomly assigned to SDF application or ART treatment. Visual and tactile examinations were used after 6 and 12 months to assess the activity of the carious lesions using the ICDAS II. RESULTS: At 6- and 12-month-evaluation periods, no statistically significant differences in lesions arrest were found between SDF and ART groups (P = 1.000). Considering the frequency of arrested caries

between the test groups at 6 and 12 months, no significant differences were observed between anterior and posterior lesions, as well as between the maxillary and mandibular lesions. When comparing the working time for the two treatments, the median time for those treated with SDF was 3.3 min, compared to 14.4 min for ART and was statistically significant ($P < 0.0001$). CONCLUSION: Both SDF and ART are, indeed, effective for arresting caries. However, the chair-time management required for SDF is significantly shorter compared to ART. Taking into consideration the present evidence, the best decision regarding disease management and application of SDF or ART is to be made by the dentist and the patient/parent, recognizing individuals' differences and preferences.

76. Effectiveness of silver diamine fluoride and glass ionomer cement combined with fluoride varnish in arresting dental caries among intellectually disabled individuals: A randomized controlled trial. Spec Care Dentist. 2021 Sep;41(5):544-552. Mendiratta M, B C M, Kumar A, Yadav V, Shyam R, Wig M.

    AIM: To assess the clinical effectiveness of 38% silver diamine fluoride (SDF) in arresting dental caries when compared to combination of fluoride-containing glass ionomer cement (GIC) and fluoride varnish(FV) (5%) among intellectually disabled (ID) individuals. METHODOLOGY: A randomized controlled trial was conducted among ID (n = 82) individuals, in permanent posterior teeth with Nyvad score 2 and 3 (active caries) of dental caries, randomly allocated to experimental arm (38% SDF) (n = 41) and control arm (GIC along with FV) (n = 41). The caries arrest rate and caries preventive fraction was observed at 6-months among both groups. RESULTS: The caries arrest rate was 94.5% with SDF and 90.1% with GIC and FV ($p = 0.405$).The caries preventive fraction of SDF over GIC with FV was 45%, with hazard ratio (-0.588) at 6 months ($p = 0.292$). The binary logistic regression revealed that the Odds of arresting caries in SDF group is two times when compared to GIC group with p value = 0.218 which is not significant. CONCLUSION: The present study concluded that the SDF is as clinically effective as combination of GIC and fluoride varnish in arresting caries. Further research and longer follow-up required for more conclusive results.

77. Silver diamine fluoride treatment of active root caries lesions in older adults: A case series. J Dent. 2021 Feb;105:103561. Mitchell C, Gross AJ, Milgrom P, Mancl L, Prince DB.

    OBJECTIVE: The authors conducted a case series to determine arrest of root surface caries lesions in older adults when teeth were treated topically with 38 % silver diamine fluoride (SDF). METHODS: The study was a prospective, single center case series. The patients were 62 older adults (age ≥55 years) who sought treatment at a dental school clinic. To be included, a patient needed to have at least one active root caries lesion. Lesions were rinsed and then dried with air, isolated, and then 38 % SDF was applied for two minutes with a microbrush. Treated lesions were re-evaluated at 2-3 weeks. Treatment was repeated every six months. Survival analysis methods for clustered data were used to estimate the caries lesion arrest probability over time separately for root surfaces and at crown margins. RESULTS: Fifty-five participants returned for follow-up (44 % female, mean age (SD) 79.8 (7.4)). The probability of a lesion arresting with treatment ranged from 82.9 to 91.6%. Arrest rates at 18 months were slightly higher in root surfaces than around crown margins, 91.6 % (95 % CI 69.1-97.1) versus 89.8 % (95 % CI 71.6-96.3). All furcal lesions (n = 7) were arrested by 6 months, 100 % (95 % CI 59-100). CONCLUSION AND CLINICAL SIGNIFICANCE: Repeated application of 38 % SDF at 6-month intervals was effective in arresting decay of root surface lesions and lesions around crowns in older adults. Study outcomes support SDF treatment for older adult patients who are frail and residing in nursing homes or dependent living facilities.

78. Silver Diamine Fluoride (SDF) in the management of root caries in elders: a systematic review and meta-analysis. Swiss Dent J. 2021 May 10;131(5):417-424. Epub 2021 Jan 29. Grandjean ML, Maccarone NR, McKenna G, Müller F, Srinivasan M.

    This systematic review was undertaken to address the PICO question: Is silver diamine fluoride (SDF) effective in preventing and arresting root caries lesions in (RCLs) elders? Systematic literature searches were conducted of electronic databases [PubMed, Embase, and CENTRAL (Cochrane Controlled Register of Trials)] and hand searches were performed to identify studies reporting on the use of SDF in elders to prevent and arrest root caries. Prospective clinical studies were included. Two independent investigators performed the literature search and data extraction. A total of 277 studies were identified; of those 3 randomized controlled clinical trials were included for

data extraction and analysis. A meta-analysis, using a fixed-effects model, was performed on the mean active RCLs present after SDF intervention compared to controls at 24 months (3 studies), and 30-36 months (2 studies) post-intervention. The fixed-effects model revealed a significant decrease in the mean new active RCLs post intervention with SDF compared to controls at both 24 months (95%CI: 0.265 - 0.638; I2=0.0%; Overall: Z=4.749, p<0.001), and at 30-36 months (95%CI: 0.329 - 0.812; I2=0.0%; Overall: Z=4.629, p<0.001). A funnel plot ruled out any publication bias and the risk of bias was judged to be low. This systematic review and meta-analysis provides evidence that the application of silver diamine fluoride prevents and arrests root caries in elders.

Treatment Considerations

79. Radiological Evaluation of Stainless Steel Crowns Placed on Permanent Teeth in Patients Treated under General Anaesthesia. Int J Environ Res Public Health. 2021 Mar 3;18(5):2509. Munoz-Sanchez ML, Linas N, Decerle N, Collado V, Faulks, Nicolas E, Hennequin M, Cousson PY.

    Evidence-based evaluations of dental treatment are needed to support the development of special care dentistry services. This retrospective study was designed to collect and analyse X-ray images of permanent teeth restored with stainless steel crowns (SSC) in patients treated under general anaesthesia. Between 2013 and 2019, 360 permanent molars were crowned with SSCs in 198 adult patients. One calibrated investigator used an original validated tool to evaluate four radiographic criteria for molars restored with SSCs: (i) marginal adaptation; (ii) interdental proximal contact; (iii) the presence of glass ionomer cement overflow; and (iv) the loss of alveolar bone. Overall, no defect or a minor defect was reported for the majority of SSCs for the criteria "Marginal adaptation" (62.5%, n = 320), "Proximal contact" (82.2%, n = 236) and "Cement overflow" (95.8%, n = 337). Alveolar bone resorption was reported in 8.3% of cases, n = 14, after a mean period of 8.9 ± 14.3 months. It was shown that the restoration of permanent teeth using SSCs placed under general anaesthesia presents a low risk of periodontal morbidity in the medium term when assessed radiographically.

80. Dental Trauma in Children with Autistic Disorder: A Retrospective Study. Biomed Res Int. 2021 Sep 8;2021:3125251. Marra PM, Parascandolo S, Fiorillo L, Cicciù M, Cervino G, D'Amico C, De Stefano R, Salerno P, Esposito U, Itro A.

    BACKGROUND: The oral health care of autistic children is elaborated; they often fail to define dental problems, and a family-centered approach can be useful to improve and intercept these disorders. AIM: To assess the oral status of autistic children, comparing it with no autistic patients. MATERIALS AND METHODS: A retrospective study analyzed the oral health status of 70 children, 35 with autism and 35 without the disorder. Conditions assessed were dental trauma type, periodontal tissue injuries, soft tissue lip injuries, different treatments carried out, associated soft tissue findings and disorders, and the long-term management. All patients (≤15 years of age) were chosen consecutively. RESULTS: Females (57%) suffered more traumatic injuries than males (43%) in the autistic group, whereas males affected by dental trauma (54%) are predominant in the control group. The enamel fracture was the main finding among the dental trauma types in both groups followed by enamel/dentin/pulp fracture (31%), root fracture (11%), and avulsions (3%) in the autistic group and by avulsions (20%), root fracture (11%), and enamel/dentin/pulp fracture (6%) in the control group. The comparison of all variables of the two groups showed a statistically significant difference (P < 0.012). The lower lip was statistically more injured than the upper lip (P < 0.005). CONCLUSIONS: The composite restorative technique was the most common approach carried out; the long-term evaluation, when possible, was predominantly managed through root canal therapy in the control group (81%), and root canal therapy (50%) and tooth extraction (50%) in the sample group.

81. Non-surgical periodontal therapy effectively improves patient-reported outcomes: A systematic review. Int J Dent Hyg. 2021 Feb;19(1):18-28. doi: 10.1111/idh.12450. Epub 2020 Jul 16. Khan S, Khalid T, Bettiol S, Crocombe LA.

    AIM: Modern lifespan oral health research focuses on understanding the impact of periodontitis (or therapy) on clinical and patient-based outcome measures to provide effective care, improve patient safety according to the quality standards. For better targeted intervention and effective disease management, this systematically review

aimed to investigate the relationship between non-surgical periodontal therapy and patient-based outcomes using OHIP-14. METHODS: Seven Databases were searched for studies on patient-based outcomes responses to periodontal treatment. The time-period defined from search was from January 1977 to January 2019. Two independent reviewers carried out data search, selection of studies, data extraction and quality assessment using Mixed Method Appraisal Tool. Prospective cohort studies, intervention studies and observational studies written in English demonstrating non-surgical periodontal therapy response on the patient-reported outcomes (using Oral Health Impact Profile 14) were included in the review. RESULTS: Thirteen studies were included in the review, which comprised of three randomised control trials, nine case series, and one was a quasi-experimental study. Eleven out of the 13 studies reported significant improvement in OHIP-14 scores amongst participants who had undergone non-surgical periodontal therapy. Physical disability, psychological discomfort and functional limitation were domains that improved significantly after non-surgical periodontal therapy in these studies. Physical pain was a common finding in short-term follow-up but improved significantly in long-term follow-up studies. CONCLUSION: Based on clinical and patient-based outcomes measurement, it is recommended that non-surgical periodontal therapy is a "gold standard" approach towards improving patient-based outcomes, reducing co-morbidities and enhancing patient safely immediately and in long term.

82. Factors affecting the oral health of inpatients with advanced cancer in palliative care. Support Care Cancer. 2022 Feb;30(2):1463-1471. Furuya J, Suzuki H, Hidaka R, Koshitani N(4), Motomatsu Y, Kabasawa Y, Tohara H, Sato Y, Minakuchi S, Miyake S.

    PURPOSE: Patients with terminal cancer undergoing multidisciplinary palliative care often have oral health problems, but these details are still unclear. This cross-sectional study aimed to elucidate the oral health of patients with terminal-stage cancer who are inpatient recipients of acute-phase palliative care, and to unveil the factors affecting their oral health. METHODS: Participants were 121 patients with terminal-stage cancer (68 males, 53 females, mean age: 73.6 ± 11.1 years) and oral health complaints. They received palliative care at Tokyo Medical and Dental University Medical Hospital between April 2017 and August 2019. Their demographic and medical details were extracted, retrospectively, from their medical records, and their oral health status, such as the number of natural teeth, removable denture usage, Oral Health Assessment Tool (OHAT), and Dysphagia Severity Scale, were evaluated. All outcomes were assessed by a dentist from the palliative care team. RESULTS: The problems with soft tissue, saliva, and oral cleanliness were observed. The absence of posterior occlusal support was common, and the use of removable dentures was often inadequate. In contrast, swallowing function was relatively well-conserved and 46.3% of the participants were capable of nutrition intake solely by mouth. Multiple regression analysis revealed a significant association between total OHAT score and age, consciousness level, prognostic level, and method of nutritional intake. CONCLUSION: The results revealed that the oral health of terminal cancer patients under palliative care declined despite receiving routine oral care from nurses, and suggest the importance of including dental professionals in multidisciplinary palliative care.

83. Postoperative Bleeding Complications after Stainless Steel Crown Placement: A Case Series [pubmed.ncbi.nlm.nih.gov] J Clin Pediatr Dent. 2021 Jan 1;45(1):12-14. doi: 10.17796/1053-4625-45.1.3. Colleen Helder [pubmed.ncbi.nlm.nih.gov], Jenelle Fleagle [pubmed.ncbi.nlm.nih.gov], Lida Alimorad [pubmed.ncbi.nlm.nih.gov], Michael Cottam [pubmed.ncbi.nlm.nih.gov]

    Stainless steel crown (SSC) placement is a common pediatric restorative treatment, generally completed with minimal complications. Discussed in this case series are two patients who presented to the emergency department (ED) with moderate oral bleeding persisting more than 12 hours after oral rehabilitation under general anesthesia. Bleeding incidence after pediatric oral rehabilitation has been found to range from 20% to 40%, with most being considered mild and significantly associated with extractions. There is limited documentation regarding moderate, persistent postoperative bleeding associated with placement of preformed metal crowns. The objective of this paper is to raise awareness of postoperative bleeding following SSC placement, discuss probable causes to minimize complications in the future, and discuss the local measures that were used to obtain hemostasis.

Drooling

84. Clozapine-Induced Hypersalivation Treated with Sulpiride - Is It a Solution? Psychiatr Danub. 2021 Spring;33(Suppl 4):1230-1232. Prljača E, Bećirović E, Hasanović M, Pajević I, Brigić A.

85. Repeated onabotulinum neurotoxin A injections for drooling in children with neurodisability. Dev Med Child Neurol. 2021 Aug;63(8):991-997. Bekkers S, Leow TY, Van Hulst K, Orriëns LB, Scheffer AR, Van Den Hoogen FJ.

    AIM: To evaluate the effect of repeated onabotulinum neurotoxin A injections for the treatment of drooling in children with neurodisabilities. METHOD: This was a retrospective cohort study, in which the first, second, and third onabotulinum neurotoxin A injection were compared within children treated between 2000 and 2020. Primary outcomes included drooling quotient, visual analogue scale (VAS), and treatment success defined as ≥50% reduction in drooling quotient and/or VAS 8 weeks after treatment. Each outcome was obtained at baseline and 8 weeks posttreatment. RESULTS: Seventy-seven children were included (mean age at first injection: 8y 3mo, SD 3y 7mo, range 3-17y; 44 males, 33 females; 51.9% with cerebral palsy, 45.5% wheelchair-bound). The objective (drooling quotient) and subjective (VAS) effect after the second injection was lower compared to the first injection. The third injection showed less objective and significantly less subjective effect compared to the first injection. An overall success rate of 74.0%, 41.6%, and 45.8% were found for the first, second, and third injection respectively. INTERPRETATION: Although onabotulinum neurotoxin A remained effective throughout the entire treatment course, there is less effect of subsequent onabotulinum neurotoxin A injections compared to the first. Although there might be a loss of effect after repeated injections, there is continued improvement for most children. What this paper adds Repeated injections show a diminished treatment effect after the second injection. A continued improvement is seen in most patients.

86. Drooling, Swallowing Difficulties and Health Related Quality of Life in Parkinson's Disease Patients. Int J Environ Res Public Health. 2021 Jul 31;18(15):8138. doi: 10.3390/ijerph18158138. Arboleda-Montealegre GY, Cano-de-la-Cuerda R, Fernández-de-Las-Peñas C, Sanchez-Camarero C, Ortega-Santiago R.

    BACKGROUND: Parkinson's disease (PD) is the most common neurodegenerative disorder associated with motor and nonmotor symptoms. Drooling, one of the nonmotor symptoms, can be present in 70-80% of patients with PD. The aim of this paper is to study the characteristics of PD patients with drooling compared to those without in terms of age, gender, disease duration, stage of the disease, swallowing difficulties, and health-related quality of life; methods: a cross-sectional study was conducted. The sample was divided into two groups: PD with drooling (n = 32) and PD without drooling (n = 30). Age, gender, disease duration and Hoehn & Yahr (H & Y) stage, Sialorrhea Clinical Scale for Parkinson's Disease (SCS-PD), the 10-item Eating Assessment Tool (EAT-10), and the 39-item Parkinson's Disease Questionnaire (PDQ-39) were compared between groups; Results: 62 individuals with PD, 40 men and 22 women (mean age 73 ± 8 years), were included. Overall, 32 patients reported drooling, and 30 did not exhibit it. The ANCOVA found significant differences between groups for the EAT-10 score (0.83, 95% CI = 5.62-9.03; $p = 0.016$) and SCS-PD score (1.48, 95% CI = 0.86-6.81; $p < 0.001$). Analysis of the PDQ-39 scores revealed no significant differences between groups for the PDQ-39 total score ($p > 0.057$) and in all subscales. The inclusion of gender, age, disease duration, and H & Y as covariates did not influence the results (all $p > 0.05$). CONCLUSIONS: drooling is related to swallowing difficulties assessed with EAT-10 but not with health-related quality of life assessed with PDQ-39 in PD patients with drooling compared to PD patients without it. Age, gender, duration of the disease, and the H & Y state of PD patients with and without drooling seem to be similar.

87. The impact of botulinum toxin type A in the treatment of drooling in children with cerebral palsy secondary to Congenital Zika Syndrome: an observational study. Neurol Res. 2021 Jan;43(1):54-60. Sales HF, Cerqueira C, Vaz D,

Medeiros-Rios D, Armani-Franceschi G, Lucena PH, Sternberg C, Nóbrega AC, Luz C, Fonseca D, Carvalho AL, Monteiro L, Siqueira IC, Bandeira ID Lucena R.

OBJECTIVE: The main aim of this study was to determine the impact of botulinum toxin A (BTX-A) on severity and frequency of drooling in children with Cerebral Palsy (CP) secondary to Congenital Zika Syndrome (CZS). METHODS: This is a prospective longitudinal observational study including 23 children who received bilateral injections of BTX in the parotid and submandibular glands. The Thomas-Stonell & Greenberg Drooling Severity and Frequency Scale was applied by a multidisciplinary team including Speech, Language and Hearing professionals. The Global Impression of Improvement (GII) Scale was also applied to assess parents' subjective perceptions of therapeutic response. Swallowing was assessed using Doppler ultrasonography. Univariate logistic regression was used to analyse differences between responders and non-responders. RESULTS: Participant age varied from 27 to 38 months (mean 31.78, SD = 2.61) all presented with Gross Motor Function Classification System (GMFCS) V. Drooling Severity and Frequency Scale scores ranged from 7 to 9 points (median = 9) prior to BTX administration and from 4 to 6 (median = 6) after. Pre- and post-treatment reduction in drooling severity occurred ($Z = -3.746$; $p < 0.001$). No cases of drooling worsening were reported. Only two subjects presented adverse effects attributed to BTX administration. Correlation was only confirmed with GII. DISCUSSION: This article presents the safe and positive impact of BTX-A administration guided by anatomical references described in the literature, even on children with microcephaly. Further studies are needed to facilitate the use of Doppler ultrasonography as a tool to characterize changes in sensory processing and motor response following intraoral input in children with CP.

88. Drooling rating scales in Parkinson's disease: A systematic review. Parkinsonism Relat Disord. 2021 Oct;91:173-180. Nascimento D, Carmona J, Mestre T, Ferreira JJ, Guimarães I.

BACKGROUND: Drooling is a clinically relevant non-motor symptom of people with Parkinson's disease (PwP). Several drooling rating scales are available. Nevertheless, the compelling scientific evidence supporting their validity is limited. This study aims to evaluate clinical rating scales for drooling, assessing their characteristics, clinimetric properties, and clinical utility classification. METHODS: A systematic review was undertaken. Two reviewers performed independent literature searches using the CENTRAL®, CINAHL®, Embase®, MEDLINE®, SciElo®, and SPEECH BITE® databases. We used consensus-based standards for the selection of health measurement instruments (COSMIN) and the International Parkinson's disease and the Movement Disorders (MDS) criteria to evaluate the included rating scales. RESULTS: The following six rating scales were identified: Drooling Impact Scale (DIS), Sialorrhea Scoring Scale (SSS), Drooling Severity and Frequency Scale (DSFS), Drooling Rating Scale (DRS), Sialorrhea Clinical Scale for Parkinson Disease (SCS-PD), and the Radboud Oral Motor inventory for Parkinson's disease - Saliva (ROMP-saliva). The scales had heterogeneous characteristics: (i) not all were created/adapted for PwP; (ii) different dimensions associated with drooling are assessed; (iii) cross-cultural adaptations are limited to some languages. The clinimetric properties showed: (i) target population size limitations; (ii) incomplete reliability analysis; (iii) lack of robust validity; (iv) sensitivity to change not fully explored. Following the MDS criteria, only one tool was classified as "recommended", the ROMP-saliva. CONCLUSIONS: This review provides information for an adequate selection of a drooling rating scale for clinical and/or research purposes. To date, ROMP-saliva is the only scale with substantial evidence of its clinimetric properties adequacy and data in PwP.

89. Surgery versus botulinum neurotoxin A to reduce drooling and improve daily life for children with neurodevelopmental disabilities: a randomized controlled trial. Dev Med Child Neurol. 2021 Nov;63(11):1351-1359. Bekkers S, Pruijn IMJ, van der Burg JJW, van Hulst K, Kok SE, Delsing CP, Scheffer ART, van den Hoogen FJA.

AIM: To compare the effect of bilateral submandibular duct ligation and botulinum neurotoxin A (BoNT-A) on drooling severity and its impact on daily life and care in children and adolescents with moderate-to-severe drooling. METHOD: This was a randomized, interventional, controlled trial in which 53 children and adolescents (31 males, 22 females, mean age 11y, range 8-22y, SD 2y 10mo) with cerebral palsy (58.5%) or other non-progressive developmental disorders (41.5%) were randomized to BoNT-A (n=26) or bilateral submandibular duct ligation (n=27). A parent questionnaire on the severity of drooling in specific positions and daily activities and the impact of

drooling on daily life and care was filled out at baseline and 8 and 32 weeks posttreatment. RESULTS: Both BoNT-A and bilateral submandibular duct ligation had a positive effect on daily care, damage to electronic equipment and/or furniture, social interactions, and self-esteem. However, bilateral submandibular duct ligation had a significant greater and longer-lasting short- (8wks) and medium-term (32wks) effect on daily care, reducing damage to electronic devices, and improving social interactions and satisfaction with life in general. INTERPRETATION: This randomized controlled trial confirms reduced drooling by both BoNT-A and bilateral submandibular duct ligation, but provides new evidence on improved well-being through a reduction in drooling. Even though there is a greater risk of complications and morbidity after bilateral submandibular duct ligation, compared to BoNT-A there was a significantly greater and longer-lasting positive effect on most outcomes. What this paper adds Bilateral botulinum neurotoxin A (BoNT-A) and submandibular duct ligation had a positive effect on the well-being of individuals with moderate-to-severe drooling. Bilateral submandibular duct ligation had a greater effect on the impact of drooling during daily care than BoNT-A. Bilateral submandibular duct ligation reduced damage to electronic devices and improved social interactions and satisfaction with life.

90. Oral health effects of botulinum toxin treatment for drooling: a systematic review. Med Oral Patol Oral Cir Bucal. 2021 Mar 1;26(2):e172-e180. doi: 10.4317/medoral.24101. Corrêa LB, Basso MB, Sousa-Pinto B, Coelho Leal S.

    BACKGROUND: Drooling is a major morbidity in several neurological diseases. Intraglandular botulinum neurotoxin (BoNT) injections have been used to manage this condition. However, by decreasing salivary flow, BoNT injections may result in an increased risk of caries and other oral adverse effects. In this study, we aimed to assess whether, in patients with drooling, intraglandular BoNT injections are associated with increased dental caries development, modifications on salivary composition (oral pH, buffering capacity and osmolality) and cariogenic bacterial load. MATERIAL AND METHODS: We performed a systematic review, searching PubMed, CENTRAL, Web of Science, and Scopus for all experimental and observational studies reporting on adverse effects of intraglandular BoNT injections in patients with drooling. Primary study selection, quality assessment, and data extraction were independently performed by two researchers. No studies were excluded based on their language, publication status or date of publication. Studies' quality was based on revised Cochrane Risk of Bias tools. Meta-analysis was not performed. RESULTS: We retrieved 1025 studies, of which 5 were included. Two studies were two randomized controlled trials and three quasi-experimental studies. None of the included studies found BoNT injections to be associated with dental caries development or with significant reductions in oral pH. One of the included primary studies even observed an increase in salivary buffer capacity. One study found an increase in Lactobacilli counts. As for the risk of bias, two studies were classified as having a critical risk, two as high risk and one as having some concerns. CONCLUSIONS: Currently, there is no evidence that, in patients with drooling, BoNT injections associate with increased risk of dental caries or disturbances in oral pH or salivary buffering capacity. However, the included primary studies had important limitations and differences in their methodologies.

Gingival Overgrowth

91. Management of medication-induced gingival hyperplasia: a systematic review. Oral Surg Oral Med Oral Pathol Oral Radiol. 2021 Jan;131(1):62-72. Mawardi H, Alsubhi A, Salem N, Alhadlaq E, Dakhil S, Zahran M, Elbadawi L.

    OBJECTIVE: Medication-induced gingival hyperplasia (MIGH) has been linked to several medications, with a reported prevalence ranging between 0.5% and 85%. The aim of this study was to systematically review the management approaches for MIGH and estimate recurrence rate and time to relapse. STUDY DESIGN: An electronic literature search was conducted using PICO questions (P = patients with medication-induced gingival hyperplasia; I = surgical and/or nonsurgical treatment options; C = no control is required; and O = partial or complete resolution and recurrence) and medical subject heading terms in the PubMed and Web of Science databases following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses protocol up to December 2019. All English-language articles on MIGH surgical and nonsurgical management options were included. Eligible articles were systematically reviewed and assessed for bias using preset criteria and multiple levels of elimination. Data were

extracted from eligible studies and analyzed. RESULTS: Twenty-two eligible articles were included in this study. Management approaches included discontinuation or change of the offending medication if medically feasible in addition to surgical and nonsurgical interventions. Nonsurgical approach included scaling and root planing, oral hygiene instructions, and antimicrobial mouthrinses. Persistent or relapsed cases had complete resolution with excision of hyperplastic gingiva. Laser-assisted surgeries combined with intensive plaque control measures demonstrated less risk of recurrence. CONCLUSIONS: Several treatment options for MIGH have been reported with variable outcomes. Duration and size of hyperplastic gingival tissue may have an effect on overall recurrence rate.

92. Increasing awareness of drug induced gingival enlargement. BMJ. 2021 Jun 21;373:n1571. doi: 10.1136/bmj.n1571. Hughes FJ.

93. Treatment of calcium channel blocker-induced gingival overgrowth without modifying medication. BMJ Case Rep. 2021 Jan 11;14(1):e238872. Morikawa S(1), Nasu M(2), Miyashita Y(2), Nakagawa T(2).

    Gingival overgrowth is a common side effect of calcium channel blockers used in the treatment of cardiovascular diseases. While controversial, management includes discontinuing the calcium channel blocker. We report the case of a 66-year-old Japanese man with hypertension and type 2 diabetes mellitus who was diagnosed with severe periodontitis covering almost all the teeth. The patient had been on nifedipine (40 mg/day) and amlodipine (10 mg/day) medication for 5 years. With his physician's consent, nifedipine was discontinued during his treatment for periodontitis, which consisted of oral hygiene instructions and scaling and root planing on all areas. Gingivectomy was performed on the areas of hard fibrous swelling. Nifedipine was resumed during periodontal treatment when the patient's hypertension worsened. His periodontal scores improved when he resumed treatment. We report that significant improvement in gingival overgrowth can occur with basic periodontal treatment, surgery and sustained intensive follow-up without adjusting calcium channel blockers.

94. Effect of silver diamine fluoride on hyperplastic gingivitis in an adult with intellectual disability-A case report. Spec Care Dentist. 2022 Jan;42(1):73-79. doi: 10.1111/scd.12633. Epub 2021 Jul 22. Lim GXD, Yang J.

    Silver diamine fluoride 38% (SDF) may possess therapeutic effects beyond desensitization, caries prevention and arresting. We report the case of a 41-year-old male with intellectual disability. He had generalized gingivitis on a reduced periodontium and presented with enlarged gingiva with mobile teeth, particularly on the upper anterior and upper left. The inflammation could not be fully resolved despite multiple debridement treatments. Due to prevalent demineralization and hypersensitive teeth on the upper left area, SDF was applied. This not only reduced the perceived hypersensitivity, but significantly improved his periodontal condition and tooth mobility over the applied areas. We discuss the potential of SDF beyond its current use.

95. Hereditary gingival fibromatosis in children: a systematic review of the literature. Clin Oral Investig. 2021 Jun;25(6):3599-3607. doi: 10.1007/s00784-020-03682-x. Epub 2020 Nov 13. Boutiou E, Ziogas IA, Giannis D, Doufexi AE.

    OBJECTIVES: Hereditary gingival fibromatosis (HGF) is an uncommon, inherited condition with slow and progressive fibrous hyperplasia of the gingiva. Due to its association with mastication, speech, and occlusion problems, early diagnosis is important. We sought to summarize the available data regarding the epidemiology, clinical characteristics, and outcomes of children with HGF (< 18 years). METHODS: A systematic literature review of the MEDLINE and Cochrane Library databases was conducted with respect to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses statement (end-of-search date: March 1, 2019). RESULTS: A total of 99 articles reporting on 146 patients were included. The mean age was 10.82 ± 3.93 years, and generalized gingival enlargement was seen in 97.16% (95% CI 92.69 to 99.14). Jaw, gingival, and teeth abnormalities; poor oral hygiene; eating; or speech difficulties were typical HGF-induced, while 60.90% had extraoral manifestations (95% CI 52.41 to 68.78). The disease was most commonly inherited in an autosomal dominant manner (88.41%, 95% CI 78.5 to 94.26), and about one-third of the patients had syndromic HGF (33.85%, 95% CI 23.50 to 46.00). Gingivectomy was performed in the majority of cases (91.15%, 95% CI 84.31 to 95.29), and recurrence was seen in 33.85% (95% CI

23.50 to 46.00). CONCLUSION: HGF should be suspected in children with nodularity and gingival fibrosis, teeth abnormalities, or jaw distortion. Family history can help to establish the diagnosis. CLINICAL RELEVANCE: More cases should focus on longer-term follow-up after gingivectomy as disease recurrence is not uncommon.

PUBLIC HEALTH/QOL

96. Denial of Operating Room Access for Pediatric Dental Treatment: A National Survey [pubmed.ncbi.nlm.nih.gov] Pediatr Dent. 2021 Jan 15;43(1):33-41. Andrew T Vo [pubmed.ncbi.nlm.nih.gov] 1 , Paul S Casamassimo [pubmed.ncbi.nlm.nih.gov] 2 , Jin Peng [pubmed.ncbi.nlm.nih.gov] 3 , Homa Amini [pubmed.ncbi.nlm.nih.gov] 4 , C Scott Litch [pubmed.ncbi.nlm.nih.gov] 5 , Kim Hammersmith [pubmed.ncbi.nlm.nih.gov] 6

    Purpose: U.S. pediatric dentists require access to hospital operating rooms (ORs) to deliver safe and effective dental care to some children but have reported denial of access to ORs for general anesthesia (GA), causing long waiting times, deferral of medically necessary dental care, and unmeasured pain and anxiety for patients. The purpose of this pilot study was to examine the extent and possible underlying causes of operating room access denial. Methods: Public policy advocates (PPAs) of the American Academy of Pediatric Dentistry completed a written or electronic questionnaire about state-specific OR denials during March 2020. Results: Responses from 50 states and the District of Columbia showed 34 PPAs (67 percent) acknowledging OR access problems, with 14 out of 34 (41 percent) reporting a moderate or major problem. Western district PPAs reported the fewest states affected (four out of 11; 36 percent). Hospitals and reimbursement emerged as frequent foci for denials in comment analysis. Conclusions: Operating room access denial is a problem for pediatric dentists in the majority of U.S. states and the District of Columbia; in those states reporting it as a problem, it was considered moderate or major in significance by almost half.

97. Oral Care Experiences of Young Adults with Autism Spectrum Disorder. J Dent Hyg. 2021 Aug;95(4):41-50. Mirsky LB, Rogo EJ, Gurenlian JR.

    Purpose: Individuals with autism need oral health care providers who understand their sensitivities and are responsive to their oral health care needs. The purpose of this study was to understand the oral health care experiences and needs of young adults with autism spectrum disorder (ASD).Methods: A qualitative descriptive research design was used and young adults with ASD were recruited through purposive and snowball sampling. Semi-structured interviews with open-ended questions were conducted and audio-recorded. Pseudonyms were used to protect confidentiality. Interviews were transcribed and data were analyzed simultaneously at the time of data collection. Open coding and axial coding were used to create common categories. Validity was established using investigator triangulation and member checks.Results: Fifteen individuals (ten males and five females) met the inclusion criteria and participated in the study. Participants revealed a range of feelings related to their oral care experiences from positive to neutral to negative. Participants identified likes and dislikes in regard to dental hygiene and dental treatment as well as daily self-care practices. Individuals reported that improvements in communication were needed; some indicated not wanting to disclose their ASD diagnosis with their oral care providers. Multiple auditory, visual, and tactile sensory challenges were experienced while waiting in the reception area and during the provision of oral health care treatment. Participants made recommendations to improve oral health care experiences.Conclusions: Results from this study offered insight into the oral care experiences of young adults with ASD and the challenges they encounter. Additional research is needed to further explore this phenomenon from the perspective of non-verbal individuals with ASD and from the standpoint of oral health care professionals who are working with young adults with developmental disabilities.

98. Failure on all fronts: Qualitative analysis of the oral health care experience in individuals with intellectual disability. Spec Care Dentist. 2021 Mar;41(2):235-243. Hassona Y, Aljafari A, Atef A(1), Abdalfattah L, Hosey MT.

    AIM: To explore the oral health care experience of individuals with intellectual disability and their families. METHODS: A qualitative approach utilising face-to-face semi-structured interviews with parents of individuals with

intellectual disability. All interviews were audio recorded and transcribed verbatim, and Qualitative Framework Analysis was used to present the results. RESULTS: Twenty-six parents of 26 individuals with intellectual disability were interviewed. The interviewees were 10 males and 16 females, and their average age was 46.4 ± 11.2 years (range 28-66). The average age of individuals with intellectual disability was 17.9 ± 9.2 years (range 6-48), and there were 11 (42.3%) males and 15 (57.7%) females. The interviewees reported that challenges to oral health care do occur on multiple levels: (a) home environment; (b) primary dental care; (c) secondary dental care facilities; (d) health and education policies and systems; and (e) societal views on individuals with intellectual disability. CONCLUSION: Individuals with intellectual disability and their families are being failed at multiple levels of oral health care, leaving parents feeling frustrated, isolated, and sometimes helpless. Collaborative efforts are needed to train families to prevent oral health disease at home, establish better primary and secondary oral health care systems, and overcome wider cultural, social, and economic barriers.

99. Association Between Dental Caries and Obesity among Children with Special Health Care Needs. Oral Health Prev Dent. 2021;19(1):101-106. Mohamed RN, Basha S, Al-Thomali Y, AlZahrani FS, Ashour AA, Almutair NE.

PURPOSE: Obesity and dental caries constitute an important public health problem worldwide. Special-needs children are at higher risk of developing dental caries and obesity because of their physical, neurological, or behavioural impairment or due to side effects of the medications they take. The present study was conducted to assess the association between dental caries and obesity among children with special health care needs in Taif City, Saudi Arabia. MATERIALS AND METHODS: A descriptive cross-sectional study was conducted among 400 (220 girls and 180 boys) special-needs children. Body mass index (BMI) was determined by using height and weight measurements. Dental caries was recorded according to World Health Organization criteria. The association between caries and obesity was assessed using multivariable logistic regression analysis. RESULTS: 289 (72.3%) children presented with caries with mean dmft and DMFT of 3.9 ± 2.7 and 4.8 ± 2.3, respectively. Regression analysis showed specials needs children were at a greater risk of having dental caries: 1.69 times (CI: 0.18-2.62, $p < 0.05$) greater with obesity; 2.01 (CI: 0.18-3.09, $p < 0.05$) times greater with sugar consumption; 2.21 times (CI: 1.27-4.12, $p < 0.001$) greater with cerebral palsy; and 2.27 (CI: 1.29-5.12, $p < 0.001$) times greater with intellectual disability. CONCLUSION: The present study showed a positive association between dental caries and obesity among children of special health care needs. Hence, a focused approach towards the common risk factors is essential to prevent both obesity and dental caries in special-needs children.

100. Frequency of molar incisor hypomineralization and associated factors among children with special health care needs. Ann Saudi Med. 2021 Jul-Aug;41(4):238-245. Mohamed RN, Basha S, Al-Thomali Y, Al Zahrani FS, Ashour AA, Al Shamrani AS, Almutair NE.

BACKGROUND: Molar incisor hypomineralization (MIH) is a frequently encountered oral condition that varies from mild opacities to posteruptive enamel breakdown. No previous published studies have investigated the frequency of MIH and associated risk factors among children with special health care needs (CSHCN) to our awareness. OBJECTIVES: Assess the frequency of MIH and associated risk factors among CSHCN. DESIGN: Cross-sectional. SETTING: Schools in provincial city of Saudi Arabia. PATIENTS AND METHODS: The study was conducted among 400 (180 boys and 220 girls) special needs children. Diagnosis of MIH was according to the European Academy of Paediatric Dentistry criteria. MAIN OUTCOME MEASURE: Result of logistic regression analysis that assessed the association between MIH prevalence and associated prenatal, perinatal, and postnatal factors. SAMPLE SIZE: 400 (180 boys and 220 girls) special needs children. RESULTS: Among 400 CSHCN, 98 (24.5%) presented with MIH. Children with multiple disabilities had a 3.89 times greater risk of MIH (95% CI: 1.91-6.19, P=.002). Children with positive prenatal factors had an adjusted odds ratio (aOR) of 2.31 times for MIH (95% CI: 1.22-4.73, P=.012). Children with a childhood infection history had an aOR of 2.43 times for MIH (95% CI: 1.31-5.85, P=.014). Children with a breastfeeding history >18 months had an aOR of 3.73 for MIH (95% CI: 1.62-8.60, P=.002). Permanent maxillary first molars were the most frequently affected teeth, and demarcated opacity was the most frequent MIH type. CONCLUSION: MIH should be recognized as one of the prevalent oral health problems among CSHCN to

prevent tooth mortality. LIMITATIONS: A cross-sectional study cannot establish a causal relationship. CONFLICTS OF INTEREST: None.

101. Assessment of dental caries in children with organic lesions of the nervous system using ICDAS II criteria. J Med Life. 2021 Jul-Aug;14(4):570-577. Pryimak KV, Zoriy IA, Bidenko NV, Borysenko AV, Batig VM, Hlushchenko TA, Batih IV, Sheremet MI.

Studies of the dental status of children with cerebral palsy (CP) indicate a high prevalence and intensity of damage to the hard tissues of the teeth. The risk of developing dental diseases is known to increase significantly as the severity of neurological symptoms increase. The purpose of the study was to assess the incidence of dental caries using the International Caries Detection and Assessment System (ICDAS II) criteria in children with organic diseases of the nervous system depending on the severity of motor impairment. A number of 122 children (mean age 8.8±3.7 years) with spastic forms of cerebral palsy were examined. They were divided into groups according to the Gross Motor Function Classification System - Expanded & Revised (GMFCS-ER). All patients underwent a neurological examination, and the state of dental caries was determined using the ICDAS II criteria. In children with cerebral palsy, lesions of the occlusal surfaces of the teeth predominate, lesions of the proximal surfaces appeared to be three times less, but more than three times higher than in healthy children. Higher intensity of the carious process and the frequency of deep cavities are observed in children with cerebral palsy with severe motor impairment, according to GMFCS-ER. Establishing the features of caries development in children with cerebral palsy depending on the severity of neurological symptoms according to the ICDAS II system is an essential factor in determining the direction of preventive measures that should be taken for this group of children.

102. Managing patients with developmental co-ordination disorder in dentistry: Developing an online resource for dental professionals by a review of the literature. Spec Care Dentist. 2022 May;42(3):244-251. doi: 10.1111/scd.12661. Epub 2021 Oct 15. Nash J, Woolley S.

AIM: To produce an online resource for dental professionals, advising them on ways to manage patients with Developmental Coordination Disorder (DCD). METHOD AND RESULTS: Literature search into the management of patients with DCD, and how to produce a high-quality leaflet using specific keywords. Using online databases, such as PubMed, the Cochrane Database and an internet search engine, an online resource in printable leaflet form was produced following a pilot readability assessment and review by those who work with individuals with DCD and a Special Care Dentistry special interest group. From the assessment tools used, the resource scored well in terms of readability and comprehension. The resource also received positive and constructive feedback from colleagues and those who work with individuals with DCD. CONCLUSION: An online resource was produced for dental professionals, although further evaluation is required on whether it will be useful to the profession. The literature review suggests the need for more research to be carried out on the association between DCD and oral health, and how dental professionals can manage those with DCD within a general dental practice.

103. The oral health status and treatment needs of children with fetal alcohol spectrum disorder [pubmed.ncbi.nlm.nih.gov] Clin Oral Investig. 2021 Jun;25(6):3497-3503. doi: 10.1007/s00784-020-03671-0. Epub 2020 Nov 4. Keith Da Silva [pubmed.ncbi.nlm.nih.gov] 1 , Dempsey Wood [pubmed.ncbi.nlm.nih.gov] 2

Objective: To investigate the oral health status and treatment needs of children with fetal alcohol spectrum disorder (FASD). Methods: In this retrospective study, the records of children between the ages of 6 and 14 who attended the College of Dentistry, University of Saskatchewan between 2016 and 2019 were reviewed. Demographic and clinical data was collected and compared for children who were identified as having FASD and a healthy control group. Results: From our total sample of 252 dental records, 68 children were identified with FASD. When compared to controls, children with FASD were significantly older at their first dental visit, and more dependent on public dental insurance. Children with FASD also had a significantly higher caries experience (97% vs 64.7%) and severity (DMFT/dmft score = 7.18 ± 1.79 vs 2.93 ± 0.98). Additionally, the results of our logistic regression model indicate that children with FASD were 4.71 times more likely (OR 4.71, 95% CI 1.58 -14.03) to be referred for treatment under general anesthesia (GA) when all other factors were controlled. Conclusions: Children with FASD may be at a

higher risk for poor oral health outcomes and have more extensive treatment needs. Our results indicate that they may also be at a higher risk for treatment under GA. Clinical relevance: Oral healthcare providers need to be award of the unique needs of children with FASD to better prevent and manage their oral disease.

104. Improving oral health in nursing home residents: A cluster randomized trial of a shared oral care intervention. Community Dent Oral Epidemiol. 2022 Apr;50(2):115-123. doi: 10.1111/cdoe.12638. Epub 2021 Apr 25. Overgaard C, Bøggild H, Hede B, Bagger M, Hartmann LG, Aagaard K.

OBJECTIVES: To compare a designated shared oral care intervention in a group of public nursing home residents with a standard oral care programme, focusing on levels of oral plaque and oral inflammation. METHODS: A cluster randomized field trial was undertaken in 14 Danish public nursing homes. There were 145 participants included in the intervention group and 98 in the control group. We undertook a six-month intervention based on the principle of situated interprofessional learning. The primary outcomes were plaque and inflammation levels measured with the mucosal plaque index (MPS); this was assessed at baseline, after three and six months (end of intervention), and at follow-up (six months postintervention). The odds ratios (OR) and 95% confidence intervals (CI) were estimated with ordinal regression. RESULTS: Socio-demographic characteristics and oral health status at baseline were comparable between the two groups, with the exception of age: the intervention group were significantly younger than controls (median 82 vs 87 years). After three and six months, those receiving the shared oral care intervention had significantly lower plaque and inflammation than the control group. The adjusted ORs for a reduction in MPS were 11.8 (CI: 6.5-21.3) and 11.0 (CI: 5.8-20.9), respectively. At follow-up, plaque levels and oral inflammation had approached the pre-intervention level, with no remaining statistically significant group differences. CONCLUSIONS: The shared oral care intervention based on a situated learning perspective was effective in improving oral health among care home residents. However, after termination of the intervention, the effect quickly decreased. This confirms the challenges of achieving long-term improvement in oral health in nursing home residents. An implementation strategy focusing on achieving changes at both organizational and individual levels with persistent attention to oral health care seem required for long-term improvement.

105. Oral health-related quality of life in X-linked hypophosphataemia and osteogenesis imperfecta. J Oral Rehabil. 2021 Feb;48(2):160-168. Gjørup H, Beck-Nielsen SS, Hald JD, Haubek D.

X-linked hypophosphataemia (XLH) and osteogenesis imperfecta (OI) are rare congenital disorders characterised by skeletal dysplasia. The two disorders may include dental anomalies potentially affecting individual well-being. The aims of study were (a) to assess the oral health-related quality of life (OHRQoL) in Danish adults with XLH or OI, and (b) to compare the results of the groups. A cross-sectional study including 35 adults with XLH, 56 adults with OI type I and 17 adults with OI types III-IV was conducted. The OHRQoL was assessed by the 49-item version of the questionnaire Oral Health Impact Profile (OHIP). Summed domain scores (seven) were compared between XLH and OI groups. Prevalence of severe impact on OHRQoL (scores 3-4) was compared between groups. The median scores in XLH group exceeded the medians in OI ($P < .05$) in the domains functional limitation (XLH:6.5; OI:4.0), pain (XLH:9.5; OI:5.0), psychological discomfort (XLH:5.5; OI:2.0), psychological disability (XLH:2.0; OI:0.0), handicap (XLH:2.0; OI:0.0) and total OHIP (XLH:35.0; OI:14.0). Differences in domains physical disability (XLH: 4.0; OI: 1.0) and social disability (XLH: 0.0; OI: 0.0) were not significant. Prevalence of severe impact on OHRQoL in the XLH group significantly exceeded the level in OI group in the domains functional limitation (XLH: 59%; OI: 35%), psychological discomfort (XLH: 38%; OI: 20%) and physical disability (XLH: 32%; OI: 13%). In conclusion, adults with XLH experience a higher negative impact on their OHRQoL than adults with OI. Only to a minor degree, individuals with OI types III-IV experience a higher impact on OHRQoL than individuals with OI type I.

106. Knowledge of caregivers of patients with special needs about oral health. Spec Care Dentist. 2022 May;42(3):325-328. Bueno TC, Pereira JV, Da Silva MMD, Elias RA, Lopes MA.

107. UK-based specialist dental professionals' experiences of working with autistic patients. Spec Care Dentist. 2022 Mar;42(2):120-136. McMillion A, Tobiansky B, Wang K, Cronin AJ, Johnson A, Monteiro J, Remington A.

Previous research has demonstrated that autistic individuals often experience difficulties accessing dental care, both as a result of autism specific difficulties and practitioners' attitudes towards autism. However, very little research exists that explores dental professionals' experiences of providing care to their autistic patients. The aim of this study was to investigate the strategies UK-based dental professionals' use when working with autistic patients METHODS AND RESULTS: In this study, dental professionals (n = 16) from a variety of specialty roles (special care, paediatrics, orthodontics) were interviewed. We asked participants to talk through, in depth, specific cases they had encountered in their practice, what sorts of accommodations they had provided, and what concerns had arisen during appointments. Thematic analysis was used to analyses the data and revealed four main themes: the unique dental needs associated with being autistic, effective adaptations to practice, the crucial role of the caregiver, and the importance of specialist knowledge CONCLUSION: Recommendations for how dentists can improve the dental experiences of autistic patients can be drawn from the specialist dentists' responses in this study. These include involving autistic patients in decisions about their treatment and being flexible and willing to work with autistic patients and their caregivers.

108. Prediction of Speech, Swallowing, and Quality of Life in Oral Cavity Cancer Patients: A Pilot Study. Laryngoscope. 2021 Nov;131(11):2497-2504. doi: 10.1002/lary.29573. Epub 2021 Apr 21. Bulbul MG, Wu M, Lin D, Emerick K, Deschler D, Richmon J, Goldsmith T, Zenga J, Puram SV, Varvares MA.

OBJECTIVES/HYPOTHESIS: To investigate the impact of specific treatment-related variables on functional and quality of life outcomes in oral cavity cancer (OCC) patients. STUDY DESIGN: Retrospective Cohort. METHODS: Patients with primary OCC at least 6 months after resection and adjuvant therapy were included. Patients completed surveys including the Speech Handicap Index (SHI), M.D. Anderson Dysphagia Inventory (MDADI), and Functional Assessment of Cancer Therapy-Head and Neck (FACT-HN). Performance Status Scale (PSS) and tongue mobility scale were completed to allow provider-rated assessment of speech and tongue mobility, respectively. Additional details regarding treatment were also collected. These data were used to generate a predictive model using linear regression. RESULTS: Fifty-three patients with oral tongue and/or floor of mouth (FOM) resection were included in our study. In multivariable analysis, greater postoperative tongue range of motion (ROM) and time since treatment improved SHI. Flap reconstruction and greater postoperative tongue ROM increased MDADI and PSS (eating and speech). A larger volume of resected tissue was inversely correlated with PSS (diet and speech). Tumor site was an important predictor of PSS (all sections). There were no statistically significant predictors of FACT-HN. CONCLUSIONS: In this pilot study, we propose a battery of tools to assess function in OCC patients treated with surgery. Using the battery of tools we propose, our results show that a surgical endpoint that preserves tongue mobility and employs flap reconstruction resulted in better outcomes, whereas those with greater volume of tissue resected and FOM involvement resulted in poorer outcomes. Larger prospective studies are needed to validate our findings. LEVEL OF EVIDENCE: 3 Laryngoscope, 131:2497-2504, 2021.

109. Global Burden of Orofacial Clefts and the World Surgical Workforce. Plast Reconstr Surg. 2021 Oct 1;148(4):568e-580e. Massenburg BB, Hopper RA, Crowe CS, Morrison SD(1), Alonso N(1), Calis M(1), Donkor P(1), Kreshanti P(1), Yuan J(1); Global Burden of Disease 2017 Orofacial Clefting Collaborators. Comment in Plast Reconstr Surg. 2021 Oct 1;148(4):581e-582e.

BACKGROUND: Orofacial clefts are one of the most common congenital anomalies, but this disease burden is unevenly distributed worldwide. The authors hypothesize that this burden falls disproportionately on the countries with the smallest surgical workforce or lowest Socio-Demographic Index, rather than those with the highest prevalence of disease. METHODS: The authors estimated the prevalence and disease burden of orofacial clefting from 1990 to 2017 in 195 countries using the Global Burden of Disease methodology. Prevalence and disability-adjusted life-years were compared geographically, temporally, and against the size of the national surgical workforce, Socio-Demographic Index, and income status. Linear and logarithmic regressions were performed. RESULTS: In 2017, the prevalence of orofacial clefting was estimated to be 10.8 million people, representing a disease burden of 652,084 disability-adjusted life-years, with most of this disease burden experienced by low- and middle-income countries (94.1%). From 1990 to 2017, there was a decrease in disease burden (-70.2%) and

prevalence (-4.9%). There was negative logarithmic association between surgical workforce size and disease burden, with a surgical workforce of greater than six providers per 100,000 population (3.6 disability-adjusted life-years versus 22.4 disability-adjusted life-years per 100,000 population; p < 0.0001). CONCLUSIONS: Burden of orofacial clefting has a strong negative association with the size of the surgical workforce, suggesting that strengthening the surgical workforce will help alleviate this burden. Epidemiologic data on countries and regions with inadequate surgical workforces and high disease burden should guide future research efforts and allocation of resources, and guide the treatment and educational goals of international charitable organizations.

110. Impact of dental treatment on the oral health-related quality of life of children and adolescents with Autism Spectrum Disorder. Spec Care Dentist. 2021 Nov;41(6):658-669. de Almeida JS, Fernandes RF, Andrade ÁCB, Almeida BDC, Amorim ANDS, Lustosa JHDCM, Mendes RF, Prado Júnior RR.

AIM: To evaluate the impact of dental treatment on the oral health-related quality of life (OHRQoL) of children and adolescents with Autism Spectrum Disorder (ASD), through the perception of caregivers. METHODS AND RESULTS: A prospective longitudinal study was conducted on 115 individuals with ASD, 6-14 years of age, recruited from the referral centers for special needs individuals at Teresina, Brazil. A clinical examination was carried out and the OHRQoL was measured using the Brazilian version of the Parental-Caregiver Perceptions Questionnaire (P-CPQ) before and 3 months after dental treatment. Data were analyzed using Kolmogorov-Smirnov, Levene, Mann-Whitney, Kruskall-Wallis, and Wilcoxon tests, and the Poison regression with backward method (P < .05). Treatment needs of children with ASD consisted of dental restorations (81.7%), oral prophylaxis (66.1%), endodontic treatment (10.4%), and tooth extractions (10.4%). The baseline P-CPQ total score varied from 1 to 33 (mean score = 13.2 [±6.4]), and at 3 months after treatment it ranged from 0 to 10 (mean score 3.4 [±2.2] (P < .001). The effect magnitude varied between 0.55 and 0.56. CONCLUSION: According to the perception of the caregivers, dental treatment had a positive impact on the OHRQoL of children and adolescents with ASD.

111. The Largest Minority Population With Unmet Oral Health Needs? Individuals With Disabilities. Compend Contin Educ Dent. 2021 Sep;42(8):478-479. Perlman SP, Wong A, Dillenberg J, Rader R.

People with disabilities develop the same health problems that affect the general population. Some may be more susceptible to developing chronic conditions because of the influence of behavioral risk factors such as increased physical inactivity. In addition, people with disabilities are more likely to be overweight or obese and to smoke. People with disabilities are at a greater risk of being a victim of violence than those without disabilities. The oral health of many people with disabilities is poor, and access to dental care is limited.

112. Barriers to Professional Dental Care among Children with Autism Spectrum Disorder. J Autism Dev Disord. 2021 Aug;51(8):2988-2994. doi: 10.1007/s10803-020-04759-y. Epub 2020 Oct 21. Alshihri AA, Al-Askar MH, Aldossary MS.Erratum in J Autism Dev Disord. 2020 Nov 27;:

Aims were to: (1) investigate the parental difficulties toward their ASD children dental care and, (2) analyze factors influencing their access to such services. Questionnaires were completed by 142 mothers of ASD children. Children aged between 2.5 and 14 years old, with 3.9:1 male to female ratio. 68.3% perceived difficulties in finding dental care. Most barriers were: Cost (75.4%), finding a dentist to treat ASD child (74.6%), and behavior of their ASD child (45.1%). There was no difference among age and "difficulty finding dental care" (p = 0.429). Having medical insurance and previous bad experience showed significant effects on the difficulty in finding dental care (p < 0.05). Children with ASD and their parents encounter various barriers to dental services.

DENTAL EDUCATION

113. Types of dental procedures provided to adults with autism spectrum condition: A descriptive study. Spec Care Dentist. 2021 Sep;41(5):553-558. Dumbuya A, Comnick C, Xie XJ, Marchini.

PURPOSE/AIM: To investigate demographic and systemic health characteristics, and the types of dental procedures performed for adults with autism that had sought care at a dental school. MATERIALS AND METHODS: De-identified data were collected from the records of patients aged 18+ who have self-reported autism. Each patient's age, gender, BMI, mental health, heart disease, xerostomia, tobacco use, alcohol use, diabetes, use of drugs, seizures, and total number of medications, as well as the type and number of dental codes used in the care of that patient within each code category were included as variables. RESULTS: The sample was composed by 244 patients. Mean age was 29.8 years (±12.3), 64.8% were males, and mean BMI was 29.9 (±8.1). Mental health condition was reported by 79.9%, heart disease by 25.4%, xerostomia by 21.7%, 20.9% reported using tobacco, 18.9% reported using alcohol, 14.8% reported having diabetes, 10.2% reported using drugs, and 3.7% reported having seizures. The median number of dental procedures per patient was nine, and exams, preventive, operative, and surgical procedures were the most common ones. CONCLUSIONS: Adult patients with autism were overweight/obese young males. Most common dental procedures were exams, followed by preventive, operative, and surgical procedures.

114. An assessment of the efficacy of clinical skills simulation using standardized patient in teaching behavior management and modification skills in Pediatric Dentistry to dental undergraduate students: A double-blinded, randomized, controlled trial. J Indian Soc Pedod Prev Dent. 2021 Jan-Mar;39(1):90-94. Santhakumar M, Vidhya R.

BACKGROUND: Clinical skills simulation (CSS) is an important tool in teaching and learning. The literature review showed a scarcity of research data regarding the use of CSS,in teaching, especially in dentistry. The use of CSS in dental teaching was found restricted to the use of low fidelity typhodonts fitted to phantom heads used in teaching cavity preparation and crown cutting. AIM: The aim of the study was to determine the efficacy of CSS using standardized patient in teaching behavior management and modification skills to dental undergraduate students. SETTINGS AND DESIGN: This double-blinded, randomized controlled trial was undertaken among 3rd year dental undergraduate students, and the study was undertaken at the Department of Pediatric and Preventive Dentistry. MATERIALS AND METHODS: Fifty, 3rd year BDS students were randomly allotted to simulation and nonsimulation groups. Baseline data regarding their knowledge in the behavior management of child patients were assessed. Simulation group was further divided into group of six students and underwent CSS with standardized patient. Pretest and posttest knowledge regarding behavior management was assessed in the simulation group using questionnaires approved by an expert committee. The results were analyzed to see if there is any improvement in their knowledge after CSS. Students in simulation and nonsimulation groups were assessed for their behavior management skills during patient management, by an independent observer, using a checklist. STATISTICAL ANALYSIS: Mean, standard deviation (SD), and unpaired student t-test were done to assess the baseline knowledge of students who participated in the study. Mean, SD, and paired t-test were used to compare the pretest and posttest score of students who underwent simulation. Mean, SD, and unpaired t-test were used to compare the behavior management skills of both groups of students. RESULTS AND CONCLUSIONS: The knowledge of students in both groups before the study was comparable with no statistically significant differences. There was a statistically significant improvement in the knowledge of students who underwent CSS regarding behavior management of child patients. The unpaired Student's t-test showed a significant difference in the behavior management skill of dental undergraduate students when treating a child patient. The students who underwent CSS fared better compared to students who were taught behavior management methods by traditional methods only. Clinical skill simulation using standardized patient is an effective adjunct to be used along with traditional method of teaching while teaching behavior management and modification skills to dental undergraduate students.

115. Dental hygiene and public health students' perception of an online interprofessional education applied learning activity. J Dent Educ. 2021 Nov;85(11):1756-1764. Claiborne DM, Durgampudi PK, Patel PT, Akpinar-Elci M.

PURPOSE/OBJECTIVES: To pilot an online interprofessional education (IPE) applied learning activity (ALA), to understand students' socialization and values towards IPE teams, and evaluate the IPE learning activity for future implementation. METHODS: A pre-and post-test design was used to assess interprofessional socialization and values utilizing the (ISVS-9A/9B) surveys before and after the IPE ALA among dental hygiene (DH) and Master of Public Health (MPH) students (n = 86). Three statements from the ISVS-9A/9B surveys were not included due to the

nature of the activity. The IPE ALA was a case study related to a federally funded community health center seeking funding for a dental van within 14 local targeted communities (i.e., children, senior citizens, special needs). Student groups were randomly assigned to one targeted community and completed questions that required application of prevention, systems thinking and management and solutions of oral health issues. Students collaboratively developed an executive summary and presentation through an online learning platform. RESULTS: A total of 73 DH (n = 38) and MPH (n = 35) students (84.8% response rate) completed the ISVS 9-A (modified), and 57 students DH (n = 33) and MPH (n = 24) students (66.3% response rate) completed the ISVS-9B (modified) and IPE activity evaluation. A positive change (pre-post) was observed based on the students' responses ($p < 0.05$) and 64% agreed that the skills obtained from the IPE ALA would help them in their careers. CONCLUSIONS: Overall, student learners' ISVS toward IPE improved after engaging in the online ALA. The use of online platforms is one low resource strategy to integrate IPE experiences into allied health and dental education.

116. A model for a geriatric teaching programme and its impact on self-rated and tested competencies of undergraduate dental students. Eur J Dent Educ. 2022 Feb;26(1):21-27. Stuck AK, Schimmel M.

INTRODUCTION: In the light of the growing ageing population, it is important that future dentists be taught geriatric competencies to assure good dental care and treatment addressing the special needs of older patients. MATERIALS AND METHODS: We developed and evaluated a geriatric teaching programme amongst final year undergraduate dental students (n = 30) at the University of Bern, Switzerland. The geriatric teaching programme was based on the European undergraduate curriculum in geriatric medicine for medical students covering the following eight geriatric domains that were considered relevant to dental care: Analgesics, cognitive impairment, decision-making capacity, gait and balance disorder, hearing impairment, malnutrition, polypharmacy and vision impairment. Using a pre/post-design, we administered a structured questionnaire including standardised questions on self-rated and tested competencies. Both assessments scores were standardised to a maximum score of 100 points. Data were evaluated by comparison of pre-test and post-test mean scores. RESULTS: The geriatric teaching programme proved to be feasible covering eight geriatric domains based on a case-based didactic approach in totally eight 45-minute lessons. Both self-rated and tested competencies of dental students increased in all eight domains in the course of the geriatric teaching programme. After the geriatric teaching programme, both mean self-rated competency scores (67.9 vs. 49.6, $p < .001$) and mean tested competency scores (78.7 vs. 56.7 points, $p < .001$) significantly improved compared to baseline. CONCLUSIONS: Integrating a consolidated refined geriatric teaching programme is a potentially feasible and effective method for dental undergraduate students and is expected to have an impact on better dental care of older patients.

117. Moving toward a competency-based curriculum: Analyzing patients' information and students' evaluation in geriatric dentistry. J Dent Educ. 2021 Aug;85(8):1329-1339. Limpuangthip N, Komin O, Tatiyapongpaiboon T.

OBJECTIVE: There is no core competency for geriatric dentistry and special patient care (GSP) in Thailand. Therefore, GSP program was developed as a knowledge-based curriculum. This study aimed to describe the development and architecture of the GSP curriculum by analyzing patients' information and students' evaluation to move toward a competency-based curriculum. Comparisons with the original GSP curriculum and future direction are discussed. METHODS: Development and architecture of the GSP curriculum were described. Information of 130 patients attending the GSP clinic, and those who participated in a maintenance recall was analyzed. Students' evaluation was performed using a 21-item questionnaire within seven domains based on the ASEAN University Network-Quality Assurance (AUN-QA) checklist. The responses were made using a five-point ordinal scale ranging from totally agree to totally disagree. RESULTS: Only 50% of the patients attended a maintenance recall. Among the recalled patients, 74.2% reported emerging problems. The AUN-QA questionnaire responses indicated that students mostly agreed with the program specification, teaching and learning approach, students' assessment methods, student quality, and support domains. The modified curriculum was developed based on the patients' information and students' evaluation. The original and modified GSP curricula were compared. CONCLUSIONS: Information analysis of the patients and students' evaluation are essential to move a knowledge-based curriculum for geriatric and special patient care dentistry toward a competency-based curriculum that is appropriate for patients' condition and serves

students' requirements. Oral health care in elderly and special care patients requires a multidisciplinary approach, and should encompass oral disease problems, behavior, and social context.

118. Dental students' perception on Disability Equality Training as part of the special care dentistry curriculum. J Dent Educ. 2021 May;85(5):690-698. Mohamed Rohani M, Mohd Nor NA.

INTRODUCTION: The Special Care Dentistry (SCD) undergraduate program increasingly aims to address student attitudes toward people with disabilities (PWD). One of the efforts made by the Faculty of Dentistry, University of Malaya (FODUM), is to introduce Disability Equality Training (DET) as part of the learning activity in the SCD curriculum. This study aimed to explore students' perception about the DET program. METHODS: This was a qualitative research project exploring students' perception toward DET in 2 cohorts of third-year dental students from FODUM (n = 100). The reflection notes were analyzed using Luborsky's method of thematic analysis. Identification of themes was based on statements that were most frequently reported by students. RESULTS: The majority of the students gave positive feedback for the training, which includes enhanced knowledge, attitudes, and skills about treating PWD. They also reflected that the DET improved their understanding of social and professional responsibility. In terms of learning experience, many reported that the training was useful and enjoyable. Students' suggestions for improvement included learning "sign language", visiting special needs centers, and providing simulation exercises involving real PWD. CONCLUSION: Students' comments on the DET were positive and they enjoyed the learning experience. The findings support the continuation of DET as part of the undergraduate dental curriculum. Dental institutions seeking to implement or refine the SCD curriculum are encouraged to include DET based on its potential benefits for undergraduate students.

119. Contemporary predoctoral paediatric behaviour guidance education in the United States and Canada [pubmed.ncbi.nlm.nih.gov] Eur J Dent Educ. 2022 Feb;26(1):85-92. doi: 10.1111/eje.12675. Epub 2021 Feb 12. David Weishuhn [pubmed.ncbi.nlm.nih.gov] 1 2 , Allison Scully [pubmed.ncbi.nlm.nih.gov] 3 , Homa Amini [pubmed.ncbi.nlm.nih.gov] 4 , Larry Salzmann [pubmed.ncbi.nlm.nih.gov] 1 , James R Boynton [pubmed.ncbi.nlm.nih.gov] 1

Purpose: To determine the contemporary educational experiences of predoctoral dental students in the United States and Canada regarding behaviour guidance (BG) of the child patient and assess trends from a previous study in 2004. Methods: Data were collected from 32 predoctoral paediatric dentistry programme directors in the United States and Canada via a web-based survey. Results: The didactic curriculum hours devoted to the teaching of BG techniques in 2019 are similar to 2004. A majority (60.7%) of programmes do not have a formal assessment of competency with BG techniques. Lectures (n = 28), clinical experience (n = 28) and observation (n = 26) were the most common techniques implemented to teach BG techniques, and tell-show-do (100%), non-verbal communication (82.1%), positive reinforcement (89.3%) and distraction (82.1%) were the techniques that more than 75% of dental students most commonly have hands-on experience with during their dental education. In 2019, students tended to have more hands-on experience with nitrous oxide/oxygen inhalation and less hands-on experience with aversive techniques and sedation. Conclusions: The majority of dental schools do not have a formal competency in BG of the child patient. Compared with 2004, nitrous oxide/oxygen is used more by dental students and there is less predoctoral education in aversive BG techniques.

MICROBIOME

120. Evaluation of antibacterial efficacy of Triphala toothwipes on oral Streptococcus mutans count in intellectually disabled children. Spec Care Dentist. 2021 Sep;41(5):619-625. Deshpande MA, Baliga S, Thosar N, Rathi N, Jyothishi S, Deulkar PV, Bane SP.

AIM: To evaluate antibacterial efficacy of Triphala toothwipes on oral Streptococcus mutans counts in intellectually disabled (ID) children. METHODS: Twenty-seven children with a mild ID were randomly divided into two groups: A - Triphala and B - placebo group. Toothwipes were given to caregivers of children belonging to the respective groups,

and were instructed to use them 1 h after their meals, twice a day for 7 days. Simplified Plaque index was recorded and plaque samples were collected for microbiological examination at baseline, 48 h, and 7 days. The obtained data were tabulated and analyzed. RESULTS: Triphala group showed a statistically significant reduction of S. mutans after 48 h and 7 days. Both Triphala and placebo groups showed a statistically significant reduction in dental plaque after 48 h and 7 days. CONCLUSION: Triphala toothwipes are effective against the oral S. mutans compared with placebo toothwipes, while both the toothwipes are equally effective in reducing dental plaque. Thus, Triphala toothwipes can be used as an adjunct aid along with routine oral hygiene practices in individuals who lack psychomotor skills or are dependent on others to maintain oral hygiene, including infants, preschoolers, geriatric population, and children with special health care needs.

121. Supragingival Biofilm: Toothpaste and Toothbrushes. Monogr Oral Sci. 2021;29:65-73. doi: 10.1159/000510201. Epub 2020 Dec 21. Cvikl B, Lussi A.

The formation of a physiological biofilm cannot be avoided under normal circumstances. However, the consequences of a supragingivally located biofilm, such as caries, gingivitis and, as a further effect, periodontitis, are relatively easy to avoid. The simplest and most common method used worldwide for the elimination of biofilm is periodic mechanical removal using a toothbrush or similar tools, such as chewing sticks or woods. This method was already used in ancient Egypt, and is still being used today, albeit advanced and improved with the help of toothpastes. Here we give a summary of the most common toothbrushes, highlighting their advantages and disadvantages. Furthermore, we provide an overview of the most common toothpastes, their ingredients, and functions. In addition, the ingredients will be critically evaluated and recommendations given for the use or non-use of certain ingredients for different target groups, such as children, healthy adults, or patients with special needs.

122. Relationship between dental and periodontal health status and the salivary microbiome: bacterial diversity, co-occurrence networks and predictive models. Sci Rep. 2021 Jan 13;11(1):929. Relvas M, Regueira-Iglesias A, Balsa-Castro C, Salazar F, Pacheco JJ, Cabral C, Henriques C, Tomás I.

The present study used 16S rRNA gene amplicon sequencing to assess the impact on salivary microbiome of different grades of dental and periodontal disease and the combination of both (hereinafter referred to as oral disease), in terms of bacterial diversity, co-occurrence network patterns and predictive models. Our scale of overall oral health was used to produce a convenience sample of 81 patients from 270 who were initially recruited. Saliva samples were collected from each participant. Sequencing was performed in Illumina MiSeq with 2 × 300 bp reads, while the raw reads were processed according to the Mothur pipeline. The statistical analysis of the 16S rDNA sequencing data at the species level was conducted using the phyloseq, DESeq2, Microbiome, SpiecEasi, igraph, MixOmics packages. The simultaneous presence of dental and periodontal pathology has a potentiating effect on the richness and diversity of the salivary microbiota. The structure of the bacterial community in oral health differs from that present in dental, periodontal or oral disease, especially in high grades. Supragingival dental parameters influence the microbiota's abundance more than subgingival periodontal parameters, with the former making a greater contribution to the impact that oral health has on the salivary microbiome. The possible keystone OTUs are different in the oral health and disease, and even these vary between dental and periodontal disease: half of them belongs to the core microbiome and are independent of the abundance parameters. The salivary microbiome, involving a considerable number of OTUs, shows an excellent discriminatory potential for distinguishing different grades of dental, periodontal or oral disease; considering the number of predictive OTUs, the best model is that which predicts the combined dental and periodontal status.

COVID-19

123. Cavernous Sinus Thrombosis and Blindness After Simple Tooth Extraction in Patient Who Recovered From Coronavirus 2019: A Case Report. J Oral Maxillofac Surg. 2022 Apr;80(4):709-713. Abdelmoiz M, Alghandour AN, Gibaly A.

The pandemic Coronavirus 2019 is a disease transmitted either by droplets from a person's sneeze or cough or direct spread; also known as severe acute respiratory syndrome coronavirus-2. Although the morbidity of the disease is mainly related to respiratory distress, the associated inflammatory response can induce various coagulopathies despite an anticoagulant therapy. The authors are documenting a case of a diabetic patient who recovered from Coronavirus 2019 and is on prophylactic anticoagulant therapy after routine extraction of a maxillary second molar that progressed to unilateral cavernous sinus thrombosis and loss of vision.

124. The Impact of the First Wave of the COVID-19 Pandemic on Providing Special Care Dentistry: A Survey for Dentists. Int J Environ Res Public Health. 2021 Mar 14;18(6):2970. doi: 10.3390/ijerph18062970. Limeres Posse J, van Harten MT, Mac Giolla Phadraig C, Diniz Freitas M, Faulks D, Dougall A, Daly B, Diz Dios P.

This study aimed to investigate the impact of COVID-19 on the experiences of special care dentistry providers worldwide. An online survey was administered from 10 to 31 July 2020. Age, sex, years of professional activity, COVID-19 status, geographical area of origin and length of lockdown period were recorded for all participating dentists. The relationships between these variables and the changes in clinical activity, the treated patients' COVID-19 status and the implementation of protective measures in the dental clinic were analyzed. A total of 436 (70.6% women) dentists from 59 countries responded to the survey. Clinical activity was reduced or stopped for 79.1% of respondents. The most common change was to limit treatment to urgent care only (53.7%). Treatment under general anesthesia or deep sedation was discontinued (51.0%) or reduced (35.8%) for the majority of respondents. Male dentists were more likely to maintain their clinical activity than female dentists ($p < 0.001$), and respondents from North America were more likely to do so than participants from other geographical regions ($p < 0.001$). Dentists from Latin America and the Caribbean were more likely to report treatment of confirmed cases of COVID-19 than those from Europe ($p < 0.001$). The implementation of protective measures in the dental office was determined by the survey participant's sex, intensity of clinical activity and geographical area of origin. To conclude, the provision of special care dentistry was considerably reduced in response to the pandemic. Service maintenance was mainly related to the geographical area in which the surveyed dentists worked, further exacerbating pre-existing inequalities.

125. An Untested and Uncooperative Pediatric Patient Undergoing a Dental Procedure Using a Negative Airflow Tent During the Coronavirus Disease 2019 Pandemic: A Case Report. A A Pract. 2021 Feb 23;15(2):e01398. Deng TA, Tsui BCH.

The coronavirus disease 2019 (COVID-19) pandemic prompted the creation of novel techniques to protect patients and health care providers. Simulations showed that disposable oxygen face tents act as a physical barrier and can be repurposed as a negative airflow tent. This case study presents a pediatric patient requiring dental surgery, ineligible for preoperative testing for COVID-19 due to developmental delay and aggression. Precautionary measures were taken by means of full personal protective equipment (PPE) and negative airflow tent. The tent added additional protection and is a promising new technique that is disposable, widely available, and offers full access to proceduralists.

126. Dental Anxiety and PTSD During the COVID-19 Pandemic: A Dentist's Nightmare. Prim Care Companion CNS Disord. 2021 Oct 21;23(5):21cr03104. Singh K, Kaur J.

127. Covid-19 vaccination among people with disability-Statement from the iADH scientific committee. Spec Care Dentist. 2021 Nov;41(6):655-657. Dougall A, Molina G, Mac Giolla Phadraig C.

ASPIRATION/SWALLOWED OBJECTS

128. Management of a swallowed denture: our experience with 34 patients [pubmed.ncbi.nlm.nih.gov] Ger Med Sci. 2021 Aug 6;19:Doc10. doi: 10.3205/000297. eCollection 2021.Vaishnevy Ganesh [pubmed.ncbi.nlm.nih.gov] 1 , Sara Drever [pubmed.ncbi.nlm.nih.gov] 1 , Joshua Agilinko [pubmed.ncbi.nlm.nih.gov] 1 , Vamsidhar Vallamkondu [pubmed.ncbi.nlm.nih.gov] 1 , Samit Majumdar [pubmed.ncbi.nlm.nih.gov] 2 , Muhammad Shakeel [pubmed.ncbi.nlm.nih.gov] 1

Background: Swallowed dentures can present with upper aerodigestive tract obstruction needing urgent intervention. Removing such an ingested denture can prove challenging and needs careful planning. Aim: To share our experience of managing patients with a swallowed denture focusing on the practical aspects of denture removal along with relevant literature review. We aim to raise a public health message on the safety aspect of usage of dentures. Subjects and methods: A retrospective analysis of the patients managed by our team in the ENT department at two hospitals in Scotland, over 10 years (2009-2019), who were found to have swallowed a denture. Data on demographics, clinical history, examination findings and management of patients were collected and analysed using Microsoft Excel. Results: A total of 34 patients were admitted with a swallowed denture, of which 24 (71%) were male and 10 (29%) were female. The mean age was 60 years (range 17-83). Of the 34 patients, 2 had a feeling of something stuck in the throat but were able to eat and drink; the rest of the patients complained about dysphagia and pain in the throat, with 2 patients also showing signs of respiratory distress. Twenty-four (71%) patients required denture removal under general anaesthetic in the theatre; 20 (59%) by rigid oesophagoscopy, 1 with tracheostomy (3%), 1 with (3%) laparoscopy and gastrostomy, and 2 (6%) with external neck exploration. Seven (20%) patients were taken to the theatre and the denture was removed with Magill forceps under light sedation using intubating laryngoscope or video laryngoscope. In 1 patient (3%), the denture material was successfully removed under flexible pharyngolaryngoscopy guidance in the clinic without sedation. The final 2 (6%) patients were reassured as no foreign body was seen on flexible laryngoscopy. Conclusion: In the absence of a clear evidence of denture ingestion, a detailed history and examination are needed to identify this serious pathology. Once confirmed, the ingested denture should be removed as soon as possible to minimize the risk of serious complications.

129. Endoscopic removal of a toothbrush in a young adult with psychiatricdisorder [pubmed.ncbi.nlm.nih.gov]. Rev Gastroenterol Peru. 2021 Jul-Sep;41(3):184-186. Claudia Alvizuri-Gómez [pubmed.ncbi.nlm.nih.gov] 1 , Jorge Espinoza-Ríos [pubmed.ncbi.nlm.nih.gov]

Ingestion of foreign bodies is a relative common situation in the emergency department; however, ingestion of toothbrush is rarely reported in the literature. We present the case of a 27-year-old man with a previous diagnosis of obsessive-compulsive disorder, who presented to the emergency department 17 hours after an ingestion of a toothbrush. We performed an endoscopic removal using a polypectomy snare in the Gastroenterology Department under moderate sedation. No complications were reported in the procedure and the patient was ischarged few hours later. Ingestion of toothbrush is rare in the literature and some authors described techniques using overtube and retractable snares and forceps. Endoscopic removal of a toothbrush under moderate sedation can be a safe and successful procedure. However, if endoscopic removal fails, surgery should be performed.

130. Swallowed partial denture in severe intellectual disability patient. BMJ Case Rep. 2021 Jan 18;14(1):e239945. Kim JH.

Swallowed partial dentures in elderly patients is an emergency situation that requires a swift response. Here, we report a case involving a patient with severe intellectual disability who swallowed his denture, which lodged at the oesophagus inlet. After failure of endoscopic removal, denture with clasp was removed using long forceps through intraoral approach under intravenous sedation. At the pharynx and oesophagus inlet level, removal of foreign body via intraoral approach should be preferentially considered over open surgery for faster patient recovery.

131. Importance of postural change for accidental ingestion of dental prostheses: a case report. J Int Med Res. 2021 Aug;49(8):3000605211040761. Matsuda S(1), Itoi H, Yoshimura H.

Accidental ingestion of dental prostheses requires immediate emergency action. The authors report a case of accidental ingestion of a dental prosthesis in a patient with a disorder of consciousness. The accidental ingestion was diagnosed by imaging examination, and the location of the dental prosthesis was explored under general anesthesia according to the preoperative examination images. However, no dental prosthesis was found in the hypopharyngeal region. The operators found a radiopaque region in the nasopharynx that was suspicious of a dental prosthesis by X-ray examination of the head and neck region. According to the X-ray examination, the dental prosthesis was removed from the nasopharynx. The patient's postoperative course was uneventful. Postural change for cases of accidental ingestion of dental prostheses may be a simple and important lifesaving step in addition to traditional methods.

ORAL HYGIENE/DIET

132. Significance of sugar intake in young adults: a review. Int J Adolesc Med Health. 2021 Oct 26;33(6):375-378. doi: 10.1515/ijamh-2021-0116. Shetty A.

BACKGROUND: Foodborne diseases non-communicable diseases (NCDs) are the main reason of death, accounting for 38 million (68%) of the 56 million premature deaths worldwide in 2012. Lower-middle and middle-income countries accounted for nearly three-quarters of all NCD fatalities (28 million), as well as the bulk of illness and premature death (82%). An excessive consumption of added sugar is source of worry for its link to unhealthy nutrition quality, overweight, and the risk of NCDs among adolescents. A further source of worry is the link among free sugar consumption and tooth cavities in young adults. Dental infections are the most common NCDs worldwide in young adults, and despite significant advances in management and cure in recent decades, issues remain, resulting in pain, anxiety, functional limitations (which include failing school grades and attendance in children), and social severe disability due to missing teeth. OBJECTIVES: The purpose of this report is to give suggestions on how to consume added sugar in order to mitigate the possibility of NCDs in children and young adults, with an emphasis on the care and mitigation of obesity and metabolic syndrome and tooth decay among young adults. METHODS AND MATERIALS: The Keywords like adolescent, Health, Dental Caries, Obesity, Sugar Intake, Recommendation have been used to evaluate the standard of evidence discovered via current systematic reviews of the scientific literature relating to significance of sugar intake consumption and its effect in young adults. RESULTS: The relevant data from prospective studies was judged to be of good quality, but data from nationwide population-based studies was judged to be of extremely low quality. Free sweeteners should be used in moderation during one's life, according to the World Health Organization (strong recommendation 1). WHO advises limiting natural sugar consumption to very little about 10% of total calorie intake among both grownups and children 2 (strong recommendation). CONCLUSIONS: There is a significant association of prevalence of tooth decay, obesity due to sugar consumption at an alarming rate hence regulators as well as curriculum developers can utilize the recommendation reviewed by us to compare current free sugar intake levels in their nations to a benchmark. They may also be used to design ways to reduce free sugar consumption through a wide variety of social health initiatives, if required.

133. Investigating the Effectiveness and Acceptability of Oral Health and Related Health Behaviour Interventions in Adults with Severe and Multiple Disadvantage: Protocol for a Mixed-Methods Systematic Review. Int J Environ Res Public Health. 2021 Nov 3;18(21):11554. doi: 10.3390/ijerph182111554. McGowan LJ, Joyes EC, Adams EA, Coyte A, Gavin R, Richmond C, Shabaninejad H, Beyer F, Broadbridge A, Dobson K, Landes D, Moffatt S, Watt RG, Sniehotta FF, Freeman R, Paisi M, Bambra C, Craig D, Kaner E, Ramsay SE.

Increasing numbers of people in England experience homelessness, substance use, and repeated offending (known as 'severe and multiple disadvantage'; SMD). Populations experiencing SMD often have extremely poor oral health,

which is closely inter-linked with high levels of substance use, smoking, and poor diet. This study aims to undertake an evidence synthesis to identify the effectiveness, resource requirements, and factors influencing the implementation and acceptability of oral health and related health behaviour interventions in adults experiencing SMD. Two systematic reviews will be conducted using mixed-methods. Review 1 will investigate the effectiveness and resource implications of oral health and related health behaviours (substance use, smoking, diet) interventions; Review 2 will investigate factors influencing the implementation of such interventions. The population includes adults (≥18 years) experiencing SMD. Standard review methods in terms of searches, screening, data extraction, and quality appraisal will be conducted. Narrative syntheses will be conducted. If feasible, a meta-analysis will be conducted for Review 1 and a thematic synthesis for Review 2. Evidence from the two reviews will then be synthesised together. Input from people with experience of SMD will be sought throughout to inform the reviews. An initial logic model will be iteratively refined during the review.

MALOCCLSION/EROSION

134. The prevalence of malocclusion is higher in schoolchildren with signs of hyperactivity. Am J Orthod Dentofacial Orthop. 2021 May;159(5):653-659. doi: 10.1016/j.ajodo.2019.11.027. Epub 2021 Mar 1. Mota-Veloso I(1), Ramos-Jorge J(2), Freitas LRP(3), Ferreira FO(4), Ramos-Jorge ML(5), Paiva SM(2), Soares RV(3).

INTRODUCTION: Attention deficit-hyperactivity disorder is a behavioral disorder characterized by a lack of focus, impulsive behavior, and or excessive activity. This research aimed to evaluate the association between signs of attention deficit-hyperactivity disorder and malocclusion in schoolchildren. METHODS: A cross-sectional study was conducted with a representative sample of 633 children aged 7-12 years. The children were clinically examined for malocclusion using the Dental Aesthetic Index. The predominant breathing pattern was also determined. Parents answered a questionnaire addressing socioeconomic characteristics and the presence of nonnutritive sucking habits. The Swanson, Nolan, and Pelham Scale-IV was filled out by both parents and teachers to compare behavioral patterns. The children were submitted to a neuropsychological evaluation using the Raven's Colored Progressive Matrix Test. Data analysis involved the chi-square test and Poisson regression analysis. RESULTS: The prevalence of malocclusion was 42% higher among children with signs of hyperactivity reported by both parents and teachers (prevalence ratio [PR], 1.42; 95% confidence interval [CI], 1.11-1.81; P = 0.004). In the final Poisson regression model, the prevalence of malocclusion was lower among schoolchildren aged 11 and 12 years (PR, 0.62; 95% CI. 0.52-0.73; P <0.001) and higher among those who used a pacifier for at least 4 years (PR, 1.25; 95% CI, 1.02-1.54; P = 0.029) as well as those classified as mouth breathers (PR, 1.28; 95% CI, 1.09-1.51; P = 0.003). CONCLUSIONS: The prevalence of malocclusion was higher among children with signs of hyperactivity independently of age, pacifier use, and mouth breathing.

135. Dental Erosion Prevalence and Its Association With Obesity Among Children With and Without Special Healthcare Needs. Oral Health Prev Dent. 2021 Jan 7;19(1):579-586. doi: 10.3290/j.ohpd.b2259007. Mohamed RN, Basha S, Al-Thomali Y, AlZahrani FS, Ashour AA, Almutair NE.

PURPOSE: Dental erosion and childhood obesity are associated with a common risk factor, soft drink consumption. The present study aims to assess the prevalence of dental erosion and its association with obesity among children with and without special healthcare needs. MATERIALS AND METHODS: A cross-sectional study was conducted on 1,200 school children (400 children with special needs (CSHN) and 800 children without special needs) in the age group of 6 to 16 years. Dental erosion was diagnosed according to World Health Organization (WHO) criteria. Body mass index (BMI; weight/height in kg/m2) was recorded for each child. The association of dental erosion and obesity was analysed using multivariate logistic regression analysis. RESULTS: A total of 331 (27.6%) children presented with dental erosion. Dental erosion prevalence among CSHN was 33.5% and among children without special needs was 24.6%. In the final fully adjusted model, children with obesity presented 2.32 times (95%CI 1.17-4.89, P = 0.001) higher odds ratio (OR) of having dental erosion than normal-weight children. Children who consumed soft drinks ≥ 1 time/day and 2-6 times a week presented with an OR of 2.65 (95%CI 1.23-5.21, P = 0.001)

times of dental erosion. Children with chronic vomiting and bulimia presented with a 3.27 (95%CI 1.72-6.12, P = 0.001) times higher OR of dental erosion. Children with gastric reflux presented with a 3.21 (95%CI 1.52 - 5.86, P = 0.001) times higher OR of dental erosion. CONCLUSION: The prevalence of dental erosion was slightly higher for special needs children compared to children without special needs. The study outcome suggests that obesity, chronic vomiting, consumption of soft drinks, and gastric reflux are statistically significantly associated with dental erosion.

136. The relation of severe malocclusion to patients' mental and behavioral disorders, growth, and speech problems. Eur J Orthod. 2021 Apr 3;43(2):159-164. doi: 10.1093/ejo/cjaa028. Koskela A(1), Neittaanmäki A(1), Rönnberg K(1), Palotie A(2)(3)(4), Ripatti S(2)(3)(4), Palotie T(5)(6).

BACKGROUND: Severe malocclusions appear in up to 20 per cent of the population. Many neuropsychiatric diseases are likely to have a neurodevelopmental, partially genetic background with their origins as early as fetal life. However, the possible relationship between neurodevelopmental disorders and severe malocclusions is unclear. The aim of this study was in a population-based setting (270 000 inhabitants) to investigate whether patients with severe malocclusions have more mental and behavioural disorders and growth or speech problems than controls without severe malocclusion. MATERIAL AND METHODS: The study group consisted of patients from the Espoo Health Care Center, Finland, born in year 2000, who were retrospectively screened for their medical and dental records, including their possible mental and behavioural disorders (i.e. attention deficit hyperactivity disorder, Asperger's syndrome, autism, mood disorder, or broadly defined behavioural abnormalities, learning problems, mental disorders, sleep disturbances, anxiety symptoms, depressive symptoms, and eating-related symptoms) and their need of orthodontic treatment according to the Treatment Priority Index (TPI). The study group consisted of a severe malocclusion group (n =1008; TPI 8-10) and a control group (n = 1068) with no severe malocclusion (TPI 0-7). RESULTS: Patients with severe mandibular retrognatia (P < 0.000), lip incompetence (P = 0.006), or neurodevelopmental disorders (mental and behavioural; P = 0.002) were found to have significantly more speech problems than the controls. The patients with severe malocclusions were leaner, that is, body mass index (kg/m2) <17, underweight; 17-25, normal weight; >25, overweight) than controls (P = 0.003), and underweight patients had a significant association with retrognathic maxilla (P < 0.000) compared to normal or overweight patients. No significant relationship between neurodevelopmental disorders and severe malocclusions, that is, retrognatia of maxilla, hypodontia, and severe dental crowding was observed. CONCLUSION: Our results indicate that patients with severe mandibular retrognatia, lip incompetence, or neurodevelopmental disorders were found to have significantly more speech problems than controls. During orthodontic treatment of patients with severe malocclusion, special attention should be paid to patients with severe mandibular retrognatia, lip incompetence, and speech problems to detect signs of possible neurodevelopmental disorders and record if potential follow-up measures are in place.

Mental Health

137. Hospital admissions for dental disorders in patients with severe mental illness in Southeast London: A register-based cohort study. Eur J Oral Sci. 2021 Feb;129(1):e12752. doi: 10.1111/eos.12752. Epub 2021 Feb 3. Chaturvedi J(1)(2), Sabbah W(1), Gallagher JE(1), Turner J(2), Curl C(3), Stewart R(1)(4).

In people with mental disorders, adverse general health is well recognized but dental diseases remain underinvestigated. The objective of this study was to investigate risk factors for hospital admissions for dental disorders in patients with severe mental illness (SMI) and/or depressive disorder. De-identified electronic mental health records from the South London and Maudsley NHS Foundation Trust (SLaM) were linked to national Hospital Episode Statistics (HES) data for analysis. Data were extracted for adults with a diagnosis of SMI (schizophrenia, schizoaffective disorder, bipolar disorder) and/or depression, who had received care at SLaM between 1 January 2010 and 31 March 2017. In the cohort of 18,999 patients thus obtained, the following factors were independently associated with hospital admission for dental disorders: female gender [odds ratio (OR) = 1.48, 95% CI: 1.31-1.68)],

Health of the Nation Outcome Scales (HoNOS) problem drinking/drug taking (OR = 1.12, 95% CI: 1.05-1.19), HoNOS physical illness/disability (OR = 1.18, 95% CI: 1.12-.25), diabetes (OR = 1.24, 95% CI: 1.06-1.43), recorded current/past smoking (OR = 1.35, 95% CI: 1.06-1.43), treatment with antidepressant medication (OR = 1.48, 95% CI: 1.31-1.68), and depressive disorder (OR = 1.36, 95% CI: 1.11-1.68). Building on previous research in this population, which indicated a relatively high risk of acute care hospitalizations with dental disorders as discharge diagnoses, a number of demographic and clinical characteristics were found to be independent predictors over a 7-yr period. Further research into these predictors would facilitate a better understanding of how adverse dental outcomes might be prevented.

138. Association between primary heath care and dental service use among supportive housing tenants with behavioral health conditions. Community Dent Oral Epidemiol. 2021 Feb;49(1):70-77. Hall G(1), Dai WF(2), Lim S(2).

OBJECTIVE: Homeless persons are at high risk for poor oral health. Supportive housing can improve housing stability for persons with behavioural health conditions, but its impact on dental service use has been little studied. METHODS: Data for this evaluation come from matched public service records for eligible applicants to a New York City supportive housing program (NY III) targeting chronic homelessness. NY III tenants (N = 5678) were compared with applicants not placed in housing (N = 6536) and applicants placed in other supportive housing programmes (N = 4823). Regression analysis was used to assess the association between supportive housing, primary care use, clinical severity and the likelihood of dental visits. RESULTS: Over four observation years, 71% of applicants had at least one dental visit for any cause and 57% for preventive dental care. Incidence of dental visits was lower for persons with physical disability (IRR = 0.91; 95% CI = 0.85, 0.97, P = .003), psychiatric hospital stays (IRR = 0.78; 95% CI = 0.68, 0.88, P < .001) and age over 54. Persons engaged in primary care (IRR = 1.26; 95% CI = 1.21, 1.31, P < .001) and outpatient mental health care (IRR = 1.16; 95% CI = 1.12, 1.21, P < .001) had greater incidence of dental visits. CONCLUSIONS: Supportive housing was associated with greater dental service use. The positive association between primary care, mental health care and dental care suggests important points of entry for dental care. Oral health education and service referrals in supportive housing and primary care settings may improve oral health service delivery to persons experiencing social exclusion due to homelessness, mental illness and poor oral health.

128. Assessing the Prevalence of Post-Traumatic Stress Disorder in Survivors of Stevens-Johnson Syndrome and Toxic Epidermal Necrolysis. 2021 Jun 1;19(3):238-239. eCollection 2021. Chen L(1), Eckert A(1), Cavigli A(1), Tracey V(1), Bitar C(1), Lauth M(1), Williams L(2).

139. The oral health of individuals with schizophrenia: A major public health problem. Spec Care Dentist. 2021 May;41(3):327-328. Denis F(1)(2)(3), Delpierre A(1), Mahalli R(1), Micheneau P(1), Rusch E(1)(3).

140. Causal effect of tooth loss on depression: evidence from a population-wide natural experiment in the USA. Epidemiol Psychiatr Sci. 2021 May 25;30:e38. doi: 10.1017/S2045796021000287. Matsuyama Y(1), Jürges H(2), Dewey M(3), Listl S(4).

AIMS: Depression severely affects people's health and well-being. Oral diseases have been suggested to be associated with depression, but so far, there is no causal evidence. This study aimed to identify the causal effect of tooth loss on depression among US adults in a natural experiment study. METHODS: Instrumental variable analysis was conducted using data from 169 061 respondents born in 1940-1978 who participated in the 2006, 2008 or 2010 waves of the Behavioral Risk Factor Surveillance System (BRFSS). Random variation in tooth loss due to differential childhood exposure to drinking water fluoride was exploited as an instrument. RESULTS: US adults who were exposed to drinking water fluoride in childhood had more remaining teeth, therefore providing a robust instrument (F = 73.4). For each additional tooth loss, depressive symptoms according to the eight-item Patient Health Questionnaire depression (PHQ-8) score increased by 0.146 (95% CI 0.008-0.284), and the probability of having clinical depression (PHQ $\geqslant$10) increased by 0.81 percentage points (95% CI -0.12 to 1.73). CONCLUSIONS: Tooth loss causally increased depression among US adults. Losing ten or more teeth had an impact comparable to adults with major depressive disorder not receiving antidepressant drugs.

141. Adverse Childhood Experiences and Oral Health Outcomes in U.S. Children and Adolescents: A Cross-Sectional Study of the 2016 National Survey of Children's Health. Int J Environ Res Public Health. 2021 Nov 23;18(23):12313. Simon A(1), Cage J(2)(3), Akinkugbe AA(1)(3)(4).

This study investigated the cross-sectional associations between exposure to nine Adverse Childhood Experiences (ACEs) and U.S. children's and adolescent's oral health outcomes. Data from 41,294 participants of the 2016 National Survey of Children's Health (NSCH) were analyzed. Past year exposure to ACE, oral health outcomes (decayed teeth, bleeding gums, and condition of the teeth), and child and caregiver sociodemographic factors were self-reported. Using SAS v. 9.4, propensity score weighted, multilevel survey-logistic regression estimated adjusted odds ratios (AORs) and 95% Confidence Intervals (CIs) of the proposed associations. The overall mean (SE) age was 8.9 (0.1) years with 51% being male. Fifty-four percent (54%) identified as non-Hispanic white, and 12% as non-Hispanic black. The prevalence of the nine ACE measures ranged from 3% for caregiver death to 25% for financial hardship and parental divorce. Children who experienced caregiver mental illness, when compared to those who did not, were more likely to report decayed teeth (AOR: 1.73 (95% CI: 1.24, 2.42)) and the condition of their teeth as fair/poor (AOR: 1.60, 95% CI: 0.61, 4.19). Children in households with financial hardship were about twice as likely to report dental caries (AOR: 1.85, 95% CI: 1.50, 2.29) and have fair/poor teeth (AOR: 1.87, 95% CI: 1.40, 2.51) and bleeding gums (AOR: 2.39, 95% CI: 1.48, 3.86). ACEs appear to be associated with worse oral health outcomes among children and adolescents. Nevertheless, the cross-sectional nature of this study precludes a causal interpretation of these findings and necessitates more research to elucidate the oral health impacts of exposure to ACEs in longitudinal follow-up studies.

UNCLASSIFIED

142. Herpes Labialis, Chlamydophila pneumoniae, Helicobacter pylori, and Cytomegalovirus Infections and Risk of Dementia: The Framingham Heart Study. J Alzheimers Dis. 2021;82(2):593-605. doi: 10.3233/JAD-200957. Zilli EM(1), O'Donnell A(2), Salinas J(3), Aparicio HJ(4)(5), Gonzales MM(1), Jacob M(1), Beiser A(2)(4), Seshadri S(1)(2)(4)(5).

BACKGROUND: An association between chronic infectious diseases and development of dementia has been suspected for decades, based on the finding of pathogens in postmortem brain tissue and on serological evidence. However, questions remain regarding confounders, reverse causality, and how accurate, reproducible and generalizable those findings are. OBJECTIVE: Investigate whether exposure to Herpes simplex (manifested as herpes labialis), Chlamydophila pneumoniae (C. pneumoniae), Helicobacter pylori (H. pylori), and cytomegalovirus (CMV) modifies the risk of dementia in a populational cohort. METHODS: Questionnaires regarding incidence of herpes infections were administered to Original Framingham Study participants (n = 2,632). Serologies for C. pneumoniae, H. pylori, and CMV were obtained in Original (n = 2,351) and Offspring cohort (n = 3,687) participants. Participants are under continuous dementia surveillance. Brain MRI and neuropsychological batteries were administered to Offspring participants from 1999-2005. The association between each infection and incident dementia was tested with Cox models. Linear models were used to investigate associations between MRI or neuropsychological parameters and serologies. RESULTS: There was no association between infection serologies and dementia incidence, total brain volume, and white matter hyperintensities. Herpes labialis was associated with reduced 10-year dementia risk (HR 0.66, CI 0.46-0.97), but not for the duration of follow-up. H. pylori antibodies were associated with worse global cognition (β -0.14, CI -0.22, -0.05). CONCLUSION: We found no association between measures of chronic infection and incident dementia, except for a reduction in 10-year dementia risk for patients with herpes labialis. This unexpected result requires confirmation and further characterization, concerning antiviral treatment effects and capture of episodes.

143. Rothia dentocariosa causing intracranial mycotic aneurysm and ischaemic stroke. BMJ Case Rep. 2021 Mar 4;14(3):e240349. doi: 10.1136/bcr-2020-240349. Kisilevsky E(1), Pesin N(1), Mandell D(2), Margolin EA(3).

We describe a case of subacute bacterial endocarditis and mycotic brain aneurysm caused by Rothia dentocariosa due to untreated dental caries. R. dentocariosa is a rare cause of endocarditis that has a high incidence of

aneurysmal and haemorrhagic complications. All patients with intracranial aneurysms who have signs of systemic infection should be considered to have mycotic aneurysms until proven otherwise. Dental habits should be included in regular medical assessment and dental care should be considered for patients presenting with infectious symptoms.

144. Tooth retention predicts good physical performance in older adults. PLoS One. 2021 Sep 20;16(9):e0255741. doi: 10.1371/journal.pone.0255741. eCollection 2021. Musacchio E(1), Binotto P(2), Perissinotto E(3), Sergi G(1), Zambon S(1), Corti MC(4), Frigo AC(3), Sartori L(1).

BACKGROUND: Oral health is closely related to both physical and psychological well-being, as it enables individuals to eat, speak, and socialize. The number of teeth is the most used indicator of oral health. Several reports document a relationship of dental status with a variety of indicators of general health but longitudinal studies employing standardized physical performance tests are infrequent in the scientific literature. SUBJECTS AND METHODS: The Italian elderly participating in the Pro.V.A. longitudinal Study (3099 subjects aged 65+ at baseline, 2196 at the 5-year follow-up 1 and 1641 at the 7-year follow- up 2) underwent detailed interview and extensive clinical and instrumental examination that included validated physical performance measures. Participants were classified into 4 groups according to the number of remaining teeth: 0, 1-7, 8-19, and 20+. To explore the association of the number of remaining teeth with physical function and disability, we performed logistic regression analyses with models progressively adjusted for a wide number of covariates, namely anthropometric (gender, age, BMI), comorbidity (cardio-vascular, osteoarticular, and neurological diseases including depression), muscle strength (assessed for upper and lower limbs), lifestyle (smoking status, alcohol use, leisure time activities) and socioeconomical status (education, income, marital status, loneliness). RESULTS: Dental status correlated with most comorbidities, lifestyle, and socio-economic variables at the univariate analysis at baseline and at follow-ups. A good dental status was significantly associated with better physical functioning and lower disability. The presence of 20+ teeth resulted significantly protective (reference group: 0 teeth) versus mobility-related disability (OR = 0.67), disability (OR = 0.54) and inability to perform heavy duties (OR = 0.62), at follow up 1 and low physical performance score (OR = 0.59) at follow up 2. Conversely, the detrimental effect of edentulism, explored in subjects with or without dentures, was present but not as straightforward. Conclusion. The assessment of a geriatric patient should include an oral evaluation as a good dental status is a crucial component of successful aging.

145. Causal Effect of Tooth Loss on Functional Capacity in Older Adults in England: A Natural Experiment. J Am Geriatr Soc. 2021 May;69(5):1319-1327. doi: 10.1111/jgs.17021. Epub 2021 Jan 26. Matsuyama Y(1)(2)(3), Listl S(4)(5), Jürges H(6), Watt RG(3), Aida J(7)(8), Tsakos G(3).

BACKGROUND/OBJECTIVES: Tooth loss is associated with reduced functional capacity, but so far, there is no relevant causal evidence reported. We investigated the causal effect of tooth loss on the instrumental activities of daily living (IADL) among older adults in England. DESIGN: Natural experiment study with instrumental variable analysis. SETTING: The English Longitudinal Study of Aging (ELSA) combined with the participants' childhood exposure to water fluoride due to the community water fluoridation. PARTICIPANTS: Five thousand six hundred and thirty one adults in England born in 1945-1965 participated in the ELSA wave seven survey (conducted in 2014-2015; average age: 61.0 years, 44.6% men). MEASUREMENTS: The number of natural teeth predicted by the exogenous geographical and historical variation in exposure to water fluoride from age 5 to 20 years old (instrumental variable) was used as an exposure variable. The outcome, having any limitations in IADL (preparing a hot meal, shopping for groceries, making telephone calls, taking medications, doing work around the house or garden, or managing money), was assessed by self-reported questionnaires. RESULTS: Linear probability model with Two-Stage Least Squares estimation was fitted. Being exposed to fluoridated water was associated with having more natural teeth in later life (coefficient: 0.726; 95% confidence interval (CI) = 0.311, 1.142; F = 11.749). Retaining one more natural tooth reduced the probability of having a limitation in IADL by 3.1 percentage points (coefficient: -0.031; 95% CI = -0.060, -0.002). CONCLUSION: Preventing tooth loss maintains functional capacity among older adults in England. Given the high prevalence of tooth loss, this effect is considerable. Further research on the mechanism of the observed causal relationship is needed.

146. Bite Force, Thickness, and Thermographic Patterns of Masticatory Muscles Post-Hemorrhagic Stroke. J Stroke Cerebrovasc Dis. 2022 Jan;31(1):106173. doi: 10.1016/j.jstrokecerebrovasdis.2021.106173. Epub 2021 Oct 23. Gomes GGC(1), Palinkas M(2), da Silva GP(3), Gonçalves CR(4), Lopes RFT(5), Verri ED(6), Fabrin SCV(7), Fioco EM(8), Siéssere S(9), Regalo SCH(10).

OBJECTIVE: Stroke is a neurological deficit of cerebrovascular origin, considered a 21st-century epidemic that causes functional changes in the human body. This study aimed to evaluate the stomatognathic system of patients after hemorrhagic stroke through the bite force, thickness, and skin temperature in the region of the masseter and temporalis muscles. MATERIAL AND METHODS: Twenty-four subjects were divided into groups: post-hemorrhagic stroke; with right side of the affected body (n = 12) and without the neurological disorder (n = 12). Maximum molar bite force was verified using a digital dynamometer. Muscle thickness was measured using ultrasound images obtained at rest and during maximal voluntary contraction of the masseter and temporalis muscles. Thermographic camera was used to record the thermographic patterns of the masseter and temporalis muscles. Data were subjected to Student's t-test (P < .05). RESULTS: The maximum molar bite force showed significant differences in the right (P = .04) and left (P = .03) sides, with a reduction in force in the post-hemorrhagic stroke group on the affected and unaffected sides. There was a significant difference (P < .05) in the thickness of the left temporal muscle at mandibular rest (P = .01) between groups. The post-hemorrhagic stroke group clinically presented greater muscle thickness in almost 100% of the muscles evaluated in both clinical conditions. There were no significant differences in skin temperature in the masseter and temporal muscles between the groups. CONCLUSIONS: Our results suggest functional changes in the stomatognathic system of subjects after a hemorrhagic stroke, especially concerning molar bite force and masticatory muscle thickness in the temporal muscle (unaffected side).

147. Persistent Opioid Use Associated With Dental Opioid Prescriptions Among Publicly and Privately Insured US Patients, 2014 to 2018. JAMA Netw Open. 2021 Apr 1;4(4):e216464. doi: 10.1001/jamanetworkopen.2021.6464. Chua KP(1)(2), Hu HM(3), Waljee JF(3)(4), Nalliah RP(5), Brummett CM(3)(6).

This cohort study uses data from 3 MarketScan databases to compare the association of persistent opioid use with dental opioid prescriptions among publicly and privately insured patients in the United States from 2014 through 2018.

148. Validity and reliability of a checklist for patients with Behçet's disease based on the International Classification of Functioning, Disability and Health. Rheumatol Int. 2022 Jan;42(1):159-165. doi: 10.1007/s00296-021-05001-3. Epub 2021 Sep 22. Tsutsui H(1)(2), Kikuchi H(3), Oguchi H(3), Kono H(3), Ohkubo T(4).

In 2020, we reported the "BD-checklist 92" for patients with Behçet's disease (BD) based on the International Classification of Functioning, Disability and Health. The purpose of the present study was to evaluate the validity and reliability of this checklist. Questionnaires using the "BD-checklist 92" and the 36-item Short Form Survey (SF-36) were sent to ten affiliated institutions. In total, 174 patients answered the questionnaire (response rate, 32.7%). Criterion validity was evaluated using the correlation coefficient between the number of problem categories extracted from the "BD-checklist 92" and the scores of the eight subscales and two components of the SF-36. Construct validity was assessed based on the number of problem categories extracted as an external criterion for the number of manifestations experienced and specific lesions. The comparison was performed using the Mann-Whitney U test. Cronbach's alpha coefficient was used to evaluate reliability. The number of problem categories in the "Body functions and structures", "Activities and participation", and "Environmental factors" components correlated significantly with all dimensions of the SF-36 questionnaire (P < 0.05 each). Construct validity showed that the number of manifestations experienced in all components (P < 0.001 each) and specific lesions in "Body functions and structures" and "All categories" (P = 0.002 and 0.050, respectively) contributed to an increased number of problems associated with BD. Cronbach's alpha coefficient for the "BD-checklist 92" was 0.926. This study confirmed the validity and reliability of the "BD-checklist 92".