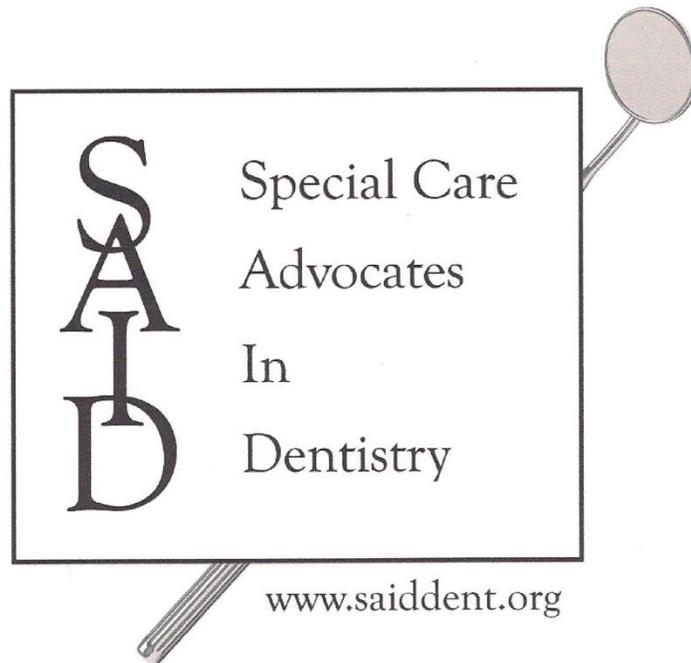


# Special Care Advocates in Dentistry 2023 Literature Review

SAID's Search of Dental Literature  
Published in Calendar Year 2022



Kimberly Espinoza, DDS, MPH

Scott Howell, DMD, MPH

## Perio and Dementia

- 1. Longitudinal Association Between Oral Status and Cognitive Decline Using Fixed-effects Analysis.** *J Epidemiol.* 2022 Jul 5;32(7):330-336. doi: 10.2188/jea.JE20200476. Epub 2021 Jul 10. Kiuchi S(1), Kusama T(1), Sugiyama K(1), Yamamoto T(1), Cooray U(1), Yamamoto T(2), Kondo K(3)(4), Osaka K(1), Aida J(5). **BACKGROUND:** Although the feasibility of randomized trials for investigating the long-term association between oral health and cognitive decline is low, deriving causal inferences from observational data is challenging. We aimed to investigate the association between poor oral status and subjective cognitive complaints (SCC) using fixed-effects model to eliminate the confounding effect of unobserved time-invariant factors. **METHODS:** We used data from Japan Gerontological Evaluation Study (JAGES) which was conducted in 2010, 2013, and 2016.  $\beta$  regression coefficients and 95% confidence intervals [CIs] were calculated using fixed-effects models to determine the effect of deteriorating oral status on developing SCC. Onset of SCC was evaluated using the Kihon Checklist-Cognitive function score. Four oral status variables were used: awareness of swallowing difficulty, decline in masticatory function, dry mouth, and number of teeth. **RESULTS:** We included 13,594 participants (55.8% women) without SCC at baseline. The mean age was 72.4 (standard deviation [SD], 5.1) years for men and 72.4 (SD, 4.9) years for women. Within the 6-year follow-up, 26.6% of men and 24.9% of women developed SCC. The probability of developing SCC was significantly higher when participants acquired swallowing difficulty ( $\beta = 0.088$ ; 95% CI, 0.065-0.111 for men and  $\beta = 0.077$ ; 95% CI, 0.057-0.097 for women), decline in masticatory function ( $\beta = 0.039$ ; 95% CI, 0.021-0.057 for men and  $\beta = 0.030$ ; 95% CI, 0.013-0.046 for women), dry mouth ( $\beta = 0.026$ ; 95% CI, 0.005-0.048 for men and  $\beta = 0.064$ ; 95% CI, 0.045-0.083 for women), and tooth loss ( $\beta = 0.043$ ; 95% CI, 0.001-0.085 for men and  $\beta = 0.058$ ; 95% CI, 0.015-0.102 for women). **CONCLUSION:** The findings suggest that good oral health needs to be maintained to prevent the development of SCC, which increases the risk for future dementia. DOI: 10.2188/jea.JE20200476 PMID: PMC9189315 PMID: 33518591 [Indexed for MEDLINE]
- 2. Effects of oral health intervention strategies on cognition and microbiota alterations in patients with mild Alzheimer's disease: A randomized controlled trial.** *Geriatr Nurs.* 2022 Nov-Dec;48:103-110. doi: 10.1016/j.gerinurse.2022.09.005. Epub 2022 Sep 22. Chen L(1), Cao H(2), Wu X(3), Xu X(4), Ji X(4), Wang B(4), Zhang P(4), Li H(5). We explored the effects of an oral health intervention on the oral microbiome and cognitive function of patients with mild Alzheimer's disease (AD) and determined the influence on disease progression. Sixty-six patients with mild AD were randomly assigned to intervention or control groups and received a 24-week oral health intervention and routine care, respectively. Data were collected at baseline and week 24. 16 S rRNA sequencing was used to analyze oral microbiota. After 24 weeks of oral health intervention, Kayser-Jones Brief Oral Health Status Examination (BOHSE), Mini-Mental State Examination (MMSE), Neuropsychiatric Inventory (NPI), Nursing Home Adjustment Scale (NHAS), and Alzheimer's Disease Cooperative Study-ADL (ADCS-ADL) scores were different between groups ( $p < 0.05$ ). Subgingival plaque in patients with AD showed significant differences in the diversity and abundance of oral microbiomes, with a higher abundance of normal oral flora in the intervention group. We found oral health intervention strategies are effective in modifying subgingival microbiota differences and slowing cognitive decline in mild AD patients. DOI: 10.1016/j.gerinurse.2022.09.005 PMID: 36155316 [Indexed for MEDLINE]
- 3. Antibodies against Periodontal Microorganisms and Cognition in Older Adults.** *JDR Clin Trans Res.* 2023 Apr;8(2):148-157. doi: 10.1177/23800844211072784. Epub 2022 Feb 10. Merchant AT(1), Yi F(1), Vidanapathirana NP(1), Lohman M(1), Zhang J(1), Newman-Norlund RD(2), Fridriksson J(2). **INTRODUCTION:** Markers of poor oral health are associated with impaired cognition and higher risk of Alzheimer disease (AD) and thus may help predict AD. **OBJECTIVES:** The aim of this study was to evaluate the cross-sectional association between empirically derived groups of 19 IgG antibodies against periodontal microorganisms and cognition in middle-aged and older adults. **METHODS:** The study population consisted of participants of the third National Health and Nutrition Examination Survey (NHANES III) (1988 to 1994), who were 60 y and older, among whom cognition and IgG antibodies against 19 periodontal microorganisms were measured (N = 5,162). **RESULTS:** In multivariable quantile regression analyses, the Orange-Red (*Prevotella melaninogenica*, *Prevotella intermedia*, *Prevotella nigrescens*, *Porphyromonas gingivalis*) and Yellow-Orange (*Staphylococcus intermedius*, *Streptococcus oralis*, *Streptococcus mutans*, *Fusobacterium nucleatum*, *Peptostreptococcus micros*, *Capnocytophaga ochracea*) cluster scores were negatively associated with cognition. A 1-unit higher cluster score for the Orange-Red cluster was associated on average with a lower cognitive score ( $\beta$  for 30th quantile = -0.2640; 95% confidence interval [CI], -0.3431 to -0.1848). Similarly, a 1-unit higher score for the Yellow-Orange cluster was associated with a lower cognitive score ( $\beta$  for 30th quantile = -0.2445; 95% CI, -0.3517 to -0.1372). **CONCLUSION:** Groups of IgG antibodies against periodontal microorganisms were associated with lower cognition among free living adults 60 years and older, who were previously undiagnosed with cognitive impairment. Though poor oral health precedes the development of dementia and AD, oral health information is currently not used, to our knowledge, to predict dementia or AD risk. Combining our findings with current algorithms may improve risk prediction for dementia and AD. **KNOWLEDGE TRANSLATION STATEMENT:** IgG antibodies against periodontal microorganisms were associated with lower cognition among adults 60 years and older previously undiagnosed with cognitive impairment. Periodontal disease may predict cognition among older adults. DOI: 10.1177/23800844211072784 PMID: PMC10029137 PMID: 35139675 [Indexed for MEDLINE]

4. **Periodontal health, cognitive decline, and dementia: A systematic review and meta-analysis of longitudinal studies.** J Am Geriatr Soc. 2022 Sep;70(9):2695-2709. doi: 10.1111/jgs.17978. Epub 2022 Sep 8. Asher S(1), Stephen R(2), Mäntylä P(1)(3), Suominen AL(1)(3), Solomon A(2)(4)(5). 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 I<sup>2</sup> 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. DOI: 10.1111/jgs.17978 PMID: 36073186 [Indexed for MEDLINE]
5. **Oral Status and Dementia Onset: Mediation of Nutritional and Social Factors.** J Dent Res. 2022 Apr;101(4):420-427. doi: 10.1177/00220345211049399. Epub 2021 Nov 19. Kiuchi S(1), Cooray U(1), Kusama T(1)(2), Yamamoto T(3), Abbas H(1), Nakazawa N(1), Kondo K(4)(5), Osaka K(1), Aida J(2)(6). Some modifiable risk factors for dementia are closely related to oral health. Although eating and speaking abilities are fundamental oral functions, limited studies have focused on the effect of malnutrition and lack of social interaction between oral health and dementia. We investigated the mediating effects of nutritional and social factors on the association between the number of teeth and the incidence of dementia. This 6-y cohort study used data from the Japan Gerontological Evaluation Study targeting older adults aged 65 y and above. The number of teeth (exposure) and covariates in 2010 (baseline survey), mediators (weight loss, vegetable and fruit intake, homeboundness, social network) in 2013, and the onset of dementia (outcome) between 2013 and 2016 were obtained. The Karlson-Holm-Breen mediation method was applied. A total of 35,744 participants were included (54.0% women). The mean age at baseline was 73.1 ± 5.5 y for men and 73.2 ± 5.5 y for women. A total of 1,776 participants (5.0%) had dementia during the follow-up period. There was a significant total effect of the number of teeth on the onset of dementia (hazard ratio, 1.14; 95% CI, 1.01-1.28). Controlling for nutritional and social mediators, the effect of the number of teeth was reduced to 1.10 (95% CI, 0.98-1.25), leaving an indirect effect of 1.03 (95% CI, 1.02-1.04). In the sex-stratified analysis, the proportion mediated by weight loss was 6.35% for men and 4.07% for women. The proportions mediated by vegetable and fruit intake and homeboundness were 4.44% and 4.83% for men and 8.45% and 0.93% for women, respectively. Furthermore, the proportion mediated by social networks was 13.79% for men and 4.00% for women. Tooth loss was associated with the onset of dementia. Nutritional and social factors partially mediated this association. DOI: 10.1177/00220345211049399 PMID: 34796750 [Indexed for MEDLINE]
6. **Dementia and the Risk of Periodontitis: A Population-Based Cohort Study.** J Dent Res. 2022 Mar;101(3):270-277. doi: 10.1177/00220345211037220. Epub 2021 Oct 13. Ma KS(1)(2)(3)(4), Hasturk H(5), Carreras I(6)(7)(8), Dedeoglu A(6)(7)(9), Veeravalli JJ(3), Huang JY(10), Kantarci A(5)(11), Wei JC(10)(12)(13). Dementia and Alzheimer's disease (AD) are proposed to be comorbid with periodontitis (PD). It is unclear whether PD is associated with dementia and AD independent of confounding factors. We aimed at identifying the relationship between the longitudinal risk of developing PD in a cohort of patients with dementia and AD who did not show any signs of PD at baseline. In this retrospective cohort study, 8,640 patients with dementia without prior PD were recruited, and 8,640 individuals without dementia history were selected as propensity score-matched controls. A Cox proportional hazard model was developed to estimate the risk of developing PD over 10 y. Cumulative probability was derived to assess the time-dependent effect of dementia on PD. Of the 8,640 patients, a sensitivity test was conducted on 606 patients with AD-associated dementia and 606 non-AD propensity score-matched controls to identify the impact of AD-associated dementia on the risk for PD. Subgroup analyses on age stratification were included. Overall 2,670 patients with dementia developed PD. The relative risk of PD in these patients was significantly higher than in the nondementia group (1.825, 95% CI = 1.715 to 1.942). Cox proportional hazard models showed that patients with dementia were more likely to have PD than individuals without dementia (adjusted hazard ratio = 1.915, 95% CI = 1.766 to 2.077, P < 0.0001, log-rank test P < 0.0001). The risk of PD in patients with dementia was age dependent (P values for all ages <0.0001); younger patients with

dementia were more likely to develop PD. The findings persisted for patients with AD: the relative risk (1.531, 95% CI = 1.209 to 1.939) and adjusted hazard ratio (1.667, 95% CI = 1.244 to 2.232; log-rank test P = 0.0004) of PD in patients with AD were significantly higher than the non-AD cohort. Our findings demonstrated that dementia and AD were associated with a higher risk of PD dependent of age and independent of systemic confounding factors. DOI: 10.1177/00220345211037220 PMID: PMC8982009 PMID: 34643147 [Indexed for MEDLINE]

7. **Is Periodontitis Associated with Age-Related Cognitive Impairment? The Systematic Review, Confounders Assessment and Meta-Analysis of Clinical Studies.** *Int J Mol Sci.* 2022 Dec 5;23(23):15320. doi: 10.3390/ijms232315320. Dzedzic A(1). It has been suggested that molecular pathological mechanisms responsible for periodontitis can be linked with biochemical alterations in neurodegenerative disorders. Hypothetically, chronic systemic inflammation as a response to periodontitis plays a role in the etiology of cognitive impairment. This study aimed to determine whether periodontitis (PDS) is a risk factor for age-related cognitive impairment (ACI) based on evidence of clinical studies. A comprehensive, structured systematic review of existing data adhering to the Preferred Reporting Items for Systematic Review and Meta Analyses (PRISMA) guidelines was carried out. Five electronic databases, PubMed, Embase, Scopus, Web of Science, and Cochrane, were searched for key terms published in peer-reviewed journals until January 2021. The Newcastle-Ottawa scale was used to assess the quality of studies and risk of bias. The primary and residual confounders were explored and evaluated. A meta-analysis synthesizing quantitative data was carried out using a random-effects model. Seventeen clinical studies were identified, including 14 cohort, one cross-sectional, and two case-control studies. Study samples ranged from 85 to 262,349 subjects, with follow-up between 2 and 32 years, and age above 45 years, except for two studies. The findings of studies suggesting the PDS-ACI relationship revealed substantial differences in design and methods. A noticeable variation related to the treatment of confounders was observed. Quality assessment unveiled a moderate quality of evidence and risk of bias. The subgroups meta-analysis and pooled sensitivity analysis of results from seven eligible studies demonstrated overall that the presence of PDS is associated with an increased risk of incidence of cognitive impairment (OR = 1.36, 95% CI 1.03-1.79), particularly dementia (OR = 1.39, 95% CI 1.02-1.88) and Alzheimer's disease (OR = 1.03 95% CI 0.98-1.07)). However, a considerable heterogeneity of synthesized data (I<sup>2</sup> = 96%) and potential publication bias might affect obtained results. While there is a moderate statistical association between periodontitis and dementia, as well as Alzheimer's disease, the risk of bias in the evidence prevents conclusions being drawn about the role of periodontitis as a risk factor for age-related cognitive impairment. DOI: 10.3390/ijms232315320 PMID: PMC9739281 PMID: 36499656 [Indexed for MEDLINE]
8. **Unhealthy oral status contributes to the older patients with cognitive frailty: an analysis based on a 5-year database.** *BMC Geriatr.* 2022 Dec 19;22(1):980. doi: 10.1186/s12877-022-03673-5. Jiang Z(#)(1)(2), Liu X(#)(1), Lü Y(3). **BACKGROUND:** Oral health is associated with the onset and deterioration of cognitive function and physical frailty, which can be improved with appropriate interventions. However, far too little attention has been paid to oral health status of elderly with cognitive frailty. The objective of this study was to investigate the oral health status and potential risk factors of elderly hospitalized patients aged 60 years or older with cognitive frailty. **METHODS:** The participants' assessment data derived from the Comprehensive Geriatric Assessment Database of hospitalized patients from The First Affiliated Hospital of Chongqing Medical University. Data were collected from April 2016 to December 2021. All participants underwent a face-to-face assessment conducted by professional evaluators. Physical frailty was defined by Fried's criteria. Cognitive function was assessed by Mini Mental State Examination (MMSE). The cognitive frailty is characterized by the simultaneous presence of at least 1 Fried's criteria and mild cognitive impairment according to Diagnostic and Statistical Manual of Mental Disorders 5th edition. The oral health was assessed according to 10-item Brief Oral Health Status Examination (BOHSE). The general demographic characteristics, BOHSE scores were compared between the cognitive frailty and non-cognitive frailty (control group). The score of BOHSE and ten items were included in the binary logistic regression analysis. The covariate characteristics were adjusted for a final model with a multivariate analysis. **RESULTS:** A total of 425 patients (245 females) with cognitive frailty and 491 patients (283 females) with non-cognitive frailty were enrolled in this retrospective study. Univariate analysis showed statistically significant differences in age, education level, living arrangement, diabetes, Body Mass Index (BMI), Pittsburgh Sleep Quality Index (PSQI), depression between the two groups. The total BOHSE score of cognitive frailty was higher than that of the control group (4.35 ± 2.68 vs. 3.64 ± 2.60, Z = 4.07, P < 0.001). The average scores and the proportions of health changes and unhealthy states of tongue, mucosa tissue, gums, natural teeth, dentures, masticatory teeth and oral hygiene in cognitive frailty were greater than those of the control group (all P < 0.05). The binary logistical regression analysis showed that four or more natural teeth decayed or broken was independently associated with cognitive frailty after adjusting the age, gender, education level, living arrangement and BMI, PSQI, diabetes and depression (OR = 1.91, 95%CI: 1.20-3.07, P = 0.007). Additionally, while in the chewing position, those cases with a normal-occlusal-relationship number of less than 11 pairs had a higher risk of cognitive frailty than those with 12 pairs or more. **CONCLUSIONS:** The oral health status of older hospitalized patients over 60 years with cognitive frailty was worse than that of patients with non-cognitive frailty. But only four or more natural teeth decayed or broken and a

reduction in chewing pairs were independent risk factors for cognitive frailty. DOI: 10.1186/s12877-022-03673-5 PMID: PMC9764571 PMID: 36536305 [Indexed for MEDLINE]

9. **Risk of dementia according to the severity of chronic periodontitis in Korea: a nationwide retrospective cohort study.** Epidemiol Health. 2022;44:e2022077. doi: 10.4178/epih.e2022077. Epub 2022 Sep 21. Kim SR(1), Son M(2), Kim YR(3), Kang HK(3). OBJECTIVES: We investigated the risk of dementia in older adults with chronic periodontitis according to the severity of periodontitis. METHODS: Data on patients with chronic periodontitis were extracted from the National Health Insurance Service-Senior cohort database from 2002 to 2014. Among 52,728 subjects eligible for inclusion, 11,953 subjects had newly diagnosed mild chronic periodontitis (MCP), and 40,775 subjects had newly diagnosed severe chronic periodontitis (SCP). Two 1:1 propensity score matched cohorts were created with 8,624 patients each in the MCP and SCP groups. To analyze the risk of dementia, a Cox proportional-hazard model was used to calculate hazard ratios with 95% confidence intervals (CIs). RESULTS: In the Kaplan-Meier curve, the disease-free probability was significantly lower in the SCP group than in the MCP group ( $p$  for log-rank=0.001). In the multivariable-adjusted model, the HR for the occurrence of dementia in the SCP group compared to the MCP group was 1.15 (95% CI, 1.04 to 1.27;  $p=0.009$ ). A subgroup analysis revealed a significant association between dementia and the severity of periodontitis, especially in subjects who were male, aged  $\geq 70$  years, and had comorbidities. CONCLUSIONS: Reducing the severity of chronic periodontitis can help to reduce the risk of dementia. Therefore, it is necessary to aggressively conduct early dementia-prevention programs for males under the age of 70 that include dental health to prevent the progression of periodontitis from mild to severe. DOI: 10.4178/epih.e2022077 PMID: PMC9849849 PMID: 36177981 [Indexed for MEDLINE]
10. **Periodontal Disease and Risk of Dementia in Medicare Patients with Hepatitis C Virus.** J Alzheimers Dis. 2022;85(3):1301-1308. doi: 10.3233/JAD-210666. Malone J(1), Jung J(2), Tran L(2), Zhao C(1)(3). BACKGROUND: Periodontal disease and hepatitis C virus (HCV) represent chronic infectious states that are common in elderly adults. Both conditions have independently been associated with an increased risk for dementia. Chronic infections are thought to lead to neurodegenerative changes in the central nervous system possibly by promoting a proinflammatory state. This is consistent with growing literature on the etiological role of infections in dementia. Few studies have previously evaluated the association of periodontal disease with dementia in HCV patients. OBJECTIVE: To examine whether periodontal disease increases the risk of developing Alzheimer's disease and related dementias (ADRD) among HCV patients in Medicare claims data. METHODS: We used Medicare claims data for HCV patients to assess the incidence rate of ADRD with and without exposure to periodontal disease between 2014 and 2017. Cox multivariate regression was used to estimate the association between periodontal disease and development of ADRD, controlling for age, gender, race, ZIP-level income and education, and medical comorbidities. RESULTS: Of 439,760 HCV patients, the incidence rate of ADRD was higher in patients with periodontal diseases compared to those without (10.84% versus 9.26%,  $p < 0.001$ ), and those with periodontal disease developed ADRD earlier compared to those without periodontal disease (13.99 versus 21.60 months,  $p < 0.001$ ). The hazard of developing ADRD was 1.35 times higher in those with periodontal disease (95% CI, 1.30 to 1.40,  $p < 0.001$ ) after adjusting for all covariates, including age. CONCLUSION: Periodontal disease increased the risk of developing ADRD among HCV patients in a national Medicare claims dataset. DOI: 10.3233/JAD-210666 PMID: PMC8821146 PMID: 34924375 [Indexed for MEDLINE]
11. **Evolving evidence for relationships between periodontitis and systemic diseases: Position paper from the Canadian Dental Hygienists Association.** Can J Dent Hyg. 2022 Oct 1;56(3):155-171. eCollection 2022 Oct. Lavigne SE(1). AIM: The aim of this position paper is to investigate the current state of the evidence for proposed associations between periodontitis and rheumatoid arthritis, Alzheimer's disease, obesity, inflammatory cancers, and renal disease using a narrative review approach. This is the last of a series of 5 position papers from the Canadian Dental Hygienists Association (CDHA) on the relationship between periodontitis and systemic conditions. METHODS: Individual literature searches were conducted for each of the 5 proposed linkages and limited to human studies, with a preference for systematic reviews (SRs) and prospective studies, in the English language, published between 2015 and 2021, focused on associations between 1) periodontitis and rheumatoid arthritis; 2) periodontitis and Alzheimer's disease/cognitive impairment; 3) periodontitis and obesity; 4) periodontitis and inflammatory cancers; and 5) periodontitis and chronic kidney disease. Databases searched were PubMed, MEDLINE/OVID, CINAHL, Scopus, Cochrane Registry of Systematic Reviews, and Web of Science. RESULTS: A total of 39 papers were selected for discussion, including 6 SRs for rheumatoid arthritis; 7 SRs for Alzheimer's disease/cognitive impairment; 11 SRs, 1 meta-review of SRs, and 1 population-based cohort study for obesity; 9 SRs for inflammatory cancers; and 4 SRs for kidney disease. CONCLUSIONS: The evidence for the 5 proposed associations varied in strength, with obesity being most strongly associated with periodontal disease. More robust studies are recommended to clarify the exact nature of these associations. PMID: PMC9674001 PMID: 36451995 [Indexed for MEDLINE]

## Sleep apnea

12. **Improvement in obstructive sleep apnea in a child with Down syndrome with rapid palatal expansion.** J Clin Sleep Med. 2022 Jul 1;18(7):1885-1888. doi: 10.5664/jcsm.9968. Kim A(1), Cho HJ(2), Choi EK(3), Choi YJ(1). Children with Down syndrome (DS) have distinct orofacial structures that predispose them to sleep-disordered breathing. The management options for obstructive sleep apnea include continuous positive airway pressure, adenotonsillectomy, mandibular advancement, and maxillary expansion. However, most of these treatment options are less effective or less viable for children with DS. Rapid maxillary expansion with a fixed orthodontic appliance is a viable alternative for DS patients because it separates the midpalatal suture and dilates the airway, regardless of the patient's compliance. We present a case of a 15-year-old boy with DS and severe obstructive sleep apnea, which dramatically improved with rapid maxillary expansion and subsequent orthodontic treatment. Although only the short-term changes have been presented in this report, this case emphasizes the need for further discussions on the viability of rapid maxillary expansion for treating obstructive sleep apnea in children with DS. CITATION: Kim A, Cho HJ, Choi EK, Choi YJ. Improvement in obstructive sleep apnea in a child with Down syndrome with rapid palatal expansion. J Clin Sleep Med. 2022;18(7):1885-1888. DOI: 10.5664/jcsm.9968 PMCID: PMC9243271 PMID: 35332867 [Indexed for MEDLINE]
13. **Association between sleep bruxism, use of antidepressants, and obstructive sleep apnea syndrome: A cross-sectional study.** J Oral Rehabil. 2022 May;49(5):505-513. doi: 10.1111/joor.13312. Epub 2022 Feb 18. Massahud MLB(1), Bruzinga FFB(1), Diniz SAM(1), Seraidarian KKA(1), Lopes RM(2), Barros VM(1), Seraidarian PI(1). BACKGROUND: Sleep bruxism (SB) is a condition regulated centrally, with a multifactorial etiology, which can occur secondary to systemic disorders and the use of certain medications. OBJECTIVE: The aim of this study was to identify associations between SB, obstructive sleep apnea, and hypopnea syndrome (OSAHS) and the use of antidepressants. MATERIAL AND METHODS: In this cross-sectional study, 240 individuals underwent full-night polysomnography for medical reasons. Anamnesis was performed to collect data about the use of antidepressants and general health conditions. Polysomnography was performed to analyse sleep data and assess respiratory-related events and apnea and hypopnea index (AHI). The polysomnographic assessment of SB was performed, from electrodes placed on masseter muscles and chin. SB was defined by the presence of more than two events of rhythmic masticatory muscles activity per hour of sleep. Statistical analyses were performed to compare the presence of SB and AHI, the severity of OSAHS, and the use of antidepressants. RESULTS: There were statistically significant differences between bruxers and non-bruxers when comparing AHI ( $48.28 \pm 25.84$ ;  $p = .001$ ) and severity of OSAHS ( $p = .015$ ). Regarding the use of antidepressants, comparative analyses did not show correlations with bruxism ( $p = .072$ ). However, logistic regression suggests that the use of these medications may represent increased odds for SB development ( $OR = 2.387$ ;  $p = .005$ ). CONCLUSION: The relationship between the use of antidepressants and SB remains inconclusive. SB is associated with OSAHS, mainly in its severe form. Therefore, identifying SB can raise the suspicion of the occurrence of other systemic disturbances. DOI: 10.1111/joor.13312 PMID: 35149999 [Indexed for MEDLINE]

## Bruxism

14. **Assessment of Symptoms Associated with Temporomandibular Dysfunction and Bruxism among Elderly Population: An Epidemiological Survey.** J Contemp Dent Pract. 2022 Apr 1;23(4):393-398. Prakash J(1), Ranvijay K(2), Devi LS(3), Shenoy M(4), Abdul NS(4), Shivakumar GC(5), Gupta P(6). AIM: The aim of the study was to assess the symptoms associated with temporomandibular disorders (TMD) and bruxism among elderly population in Ranchi, India. MATERIALS AND METHODS: A cross-sectional study was done on 600 elderly subjects; data regarding the signs and symptoms associated with temporomandibular disorder and bruxism were recorded using both structured questionnaire and clinical examination. Spearman correlation analysis was done to find the association between TMD and bruxism. RESULTS: Out of 600 subjects, 49% were males and 51% were females. The overall prevalence of TMD-related symptoms like temporomandibular joint (TMJ) pain, difficulty in jaw opening, TMJ sounds, and bruxism were 10.5, 11.2, 14, and 17% among elderly subjects. TMD symptoms and bruxism were relatively more commonly seen among females when compared to males. According to logistic regression (significantly correlated independent variables, i.e., TMD symptoms among analyzed variables), the dependent variable like bruxism had highest odds ratio, i.e., 8 for 60-70 years age-group and 15.1 for 70-80 year age-group. CONCLUSION: There was a lesser prevalence of symptoms related to TMD and bruxism among the study population, and bruxism had the highest odds ratio in TMD between the analyzed variables. CLINICAL SIGNIFICANCE: Human aging contributes too many oral problems, while resolving these, the felt needs of the population are sometimes ignored which adds up to the growing list of issues. Studies have shown inconclusive evidence regarding the prevalence of symptoms related to TMD and bruxism as these are known to trouble elderly populations. PMID: 35945831 [Indexed for MEDLINE]
15. **Occurrence of bruxism in individuals with autism spectrum disorder: A systematic review and meta-analysis.** Spec Care Dentist. 2022 Sep;42(5):476-485. doi: 10.1111/scd.12707. Epub 2022 Mar 9. Granja GL(1)(2), Lacerda-Santos JT(1)(2), Firmino RT(3)(4), Jiao R(5), Martins CC(6), Granville-Garcia AF(7), Vargas-Ferreira F(6). AIMS: To investigate bruxism in individuals with

autism spectrum disorder (ASD) and neurotypical individuals. METHODS AND RESULTS: Searches were conducted in the MedLine via Ovid, Embase via Ovid, Cochrane Database of Systematic Reviews, Scopus, Web of Science, Latin American and Caribbean Health Sciences (LILACS), Brazilian Library of Dentistry (BBO) and SciELO databases, grey literature and a hand search up to December 2020 with no restrictions imposed regarding language or year of publication (CRD42020211307). For the meta-analysis, the frequency of bruxism was extracted, with the calculation of odds ratios (OR) and 95% confidence intervals (CI) using a random effects model in RevManager. The certainty of the evidence was assessed using the Grading of Recommendations Assessment, Development and Evaluation (GRADE). Seventeen case-control studies were included in the qualitative synthesis and 15 were included in the meta-analysis, totaling a population of 3850 individuals. The ASD group was more likely to develop bruxism than the controls (OR: 3.80; 95% CI: 2.06-7.01). The certainty of the evidence was classified as "very low" for the occurrence of bruxism between ASD and control individuals. CONCLUSION: It is uncertain whether individuals with ASD are more likely to have bruxism than healthy controls. DOI: 10.1111/scd.12707 PMID: 35263459 [Indexed for MEDLINE]

16. **Prevalence of tooth grinding in children and adolescents with neurodevelopmental disorders: A systematic review and meta-analysis.** *J Oral Rehabil.* 2022 Jun;49(6):671-685. doi: 10.1111/joor.13315. Epub 2022 Mar 21. Kammer PV(1), Moro JS(1), Soares JP(1), Massignan C(2), Phadraig CMG(3), Bolan M(4). AIM: To conduct a systematic review and meta-analysis on the prevalence of tooth grinding and/or clenching (TGC) in children and adolescents with a neurodevelopmental disorder or other developmental condition. METHODS: A search was performed in seven databases, two sources of grey literature and reference lists of included studies. Risk of bias was assessed using the Joanna Briggs Institute Critical Appraisal Checklist for Studies Reporting Prevalence Data. We used random-effects models with Freeman-Tukey double arcsine transformation for the meta-analyses. RESULTS: After selection, 77 of the 2240 studies met inclusion criteria and were categorised by disability and type of TGC (reported, clinically observed and definitive). The pooled prevalence of reported TGC in individuals with attention-deficit hyperactivity disorder was 57.6% (95% CI [confidence interval]: 49.5-65.6), 50.4% (95% CI: 35.5-65.4) in individuals with autism spectrum disorder, 67% (95% CI: 59.2-74.8) in cerebral palsy and 68.2% (95% CI: 59.8-76.6) in Down syndrome. Pooled prevalence of clinically observed TGC was 57.5% (95% CI: 31.6-83.4) in autism spectrum disorder and 71.9% (95% CI: 52.4-91.4) in cerebral palsy. Individuals with attention-deficit hyperactivity disorder presented 39.8% (95% CI: 24-55.6) of definitive TGC. CONCLUSION: Prevalence of reported, clinically observed, and definitive TGC varies according to disabilities, although due to high heterogeneity the result should be interpreted with caution. Variations exist mainly due to sampling bias and the use of non-validated methods to assess TGC. CRD42020212640. DOI: 10.1111/joor.13315 PMID: 35218239 [Indexed for MEDLINE]
17. **Prevalence of painful temporomandibular disorders, awake bruxism and sleep bruxism among patients with severe post-traumatic stress disorder.** *J Oral Rehabil.* 2022 Nov;49(11):1031-1040. doi: 10.1111/joor.13367. Epub 2022 Sep 18. Knibbe W(1), Lobbezoo F(1), Voorendonk EM(2)(3), Visscher CM(1), de Jongh A(2)(4)(5)(6)(7). BACKGROUND: Post-traumatic stress disorder (PTSD) is associated with painful temporomandibular disorder (TMD) and may be part of the aetiology of awake bruxism (AB) and sleep bruxism (SB). Investigating the associations between PTSD symptoms on the one hand, and painful TMD, AB and SB on the other, can help tailoring treatment to the needs of this patient group. OBJECTIVES: The aim of this study was to investigate the associations between PTSD symptoms and painful TMD, AB and SB among patients with PTSD, focusing on prevalence, symptom severity and the influence of trauma history on the presence of painful TMD, AB and SB. METHODS: Individuals (N = 673) attending a specialised PTSD clinic were assessed (pre-treatment) for painful TMD (TMD pain screener), AB and SB (Oral Behaviours Checklist), PTSD symptoms (Clinician-Administered PTSD Scale) and type of traumatic events (Life Events Checklist). RESULTS: Painful TMD, AB and SB were more prevalent among patients with PTSD (28.4%, 48.3% and 40.1%, respectively) than in the general population (8.0%, 31.0% and 15.3%, respectively; all p's < .001). PTSD symptom severity was found to be significantly, but poorly, associated with the severity of painful TMD ( $r_s = .126, p = .001$ ), AB ( $r_s = .155, p < .001$ ) and SB ( $r_s = .084, p = .029$ ). Patients who had been exposed to sexual assault were more likely to report AB than patients who had not. Similarly, exposure to physical violence was associated with increased odds for SB. CONCLUSION: Patients with severe PTSD are more likely to experience painful TMD, AB or SB, whereas type of traumatic event can be of influence. These findings can contribute to selecting appropriate treatment modalities when treating patients with painful TMD, AB and SB. DOI: 10.1111/joor.13367 PMID: 36056716 [Indexed for MEDLINE]

### Drooling/Dysphagia

18. **Effectiveness and safety of botulinum toxin in comparison with surgery for drooling in paediatric patients with neurological disorders: a systematic review.** *Br J Oral Maxillofac Surg.* 2022 Jun;60(5):e691-e701. doi: 10.1016/j.bjoms.2021.10.010. Epub 2021 Oct 30. Silva JPS(1), Faria LV(1), Almeida RC(1), Medeiros YL(1), Guimarães LDA(2). Different therapeutic methods for chronic drooling in paediatric patients with neurological problems have been described in the scientific literature. However, there is no consensus on the ideal strategy of treatment. The aim of this study was to compare botulinum toxin injection therapy and surgical modalities to control drooling in paediatric patients with neurological disorders. A systematic literature

search was conducted on nine electronic databases for publications until April 2020. Six articles were included with a total sample of 209 patients, 67.4% (n = 141) of whom had cerebral palsy. All studies used injections of botulinum toxin type A with application to the submandibular and/or parotid salivary glands. The surgical treatments were duct ligation in the parotid and/or submandibular salivary glands, duct relocation in the submandibular salivary glands, and glandular excision of the submandibular and sublingual salivary glands. There were complications in only 16.1% (n = 27) of the sample (11 cases due to botulinum toxin application and 16 due to surgery). Drooling control was assessed by objective and subjective measures. Although surgical procedures presented a higher risk of adverse effects than botulinum toxin type A in all the studies and measurements performed, they presented larger and longer-lasting positive effects on drooling. We suggest bilateral submandibular duct relocation with bilateral sublingual gland excision or isolated bilateral submandibular duct ligation, which were the surgical techniques with the largest samples in this review. Nevertheless, further studies are necessary to compare samples with botulinum toxin type A and surgical treatment. DOI: 10.1016/j.bjoms.2021.10.010 PMID: 35227530 [Indexed for MEDLINE]

19. **Oral Health Status of Adult Dysphagic Patients That Undergo Endoscopic Gastrostomy for Long Term Enteral Feeding.** Int J Environ Res Public Health. 2022 Apr 15;19(8):4827. doi: 10.3390/ijerph19084827. Lopes S(1), Tavares V(1), Mascarenhas P(2), Lopes M(1), Cardote C(1), Godinho C(2), Oliveira C(3), Santos CA(3), Oom M(1), Grillo-Evangelista J(1), Fonseca J(2)(3). BACKGROUND: Endoscopic Gastrostomy (PEG) is required to maintain a feeding route when neurological or cancer dysphagia impact oral intake. This study aimed to evaluate the oral health and oral changes of PEG-patients without oral feeding for three months. METHODS: Prospective observational study, with a PEG-patients convenience sample. Data were obtained before PEG (T0) and 3 months after gastrostomy (T1). Initial oral hygiene habits were collected through a questionnaire. Intra-oral evaluation was performed using: Plaque Index (IP), Gingival Index (IG), Decayed, Missing and Filled Teeth Index (DMF), Community Periodontal Index (CPI), and Attachment Loss (AL). T0 and T1 were compared to evaluate oral health evolution. RESULTS: Thirty-nine patients aged  $65.3 \pm 17.4$  years were included. Initial (T0) oral health was worse than expectable. Between assessments period, oral indexes suffered a general deterioration with statistical relevance to the DMF. The frequency of deep periodontal pockets and attachment loss remained stable. CONCLUSIONS: PEG-patients presented poor oral health and insufficient oral hygiene habits, even before gastrostomy. After three months of PEG feeding, oral health suffered a general deterioration. This outcome was probably associated with the absence of oral feeding activity, which is beneficial to oral homeostasis, and further reduced oral hygiene. Improved oral daily care and dental appointments should become part of the PEG-patients follow-up. DOI: 10.3390/ijerph19084827 PMID: 35457695 [Indexed for MEDLINE]

### **GERD/Erosion**

20. **Association between gastric reflux, obesity and erosive tooth wear among psychiatric patients.** Medicine (Baltimore). 2022 Feb 18;101(7):e28923. doi: 10.1097/MD.00000000000028923. Ashour AA(1), Fahmi MK(2), Mohamed RN(3), Basha S(4), Binmadi N(5), Enan ET(6), Basalim A(7), Qahatani AA(8). The prevalence of erosive tooth wear and obesity are high in psychiatric patients and soft drink consumption is a common risk factor associated with both diseases. This study aimed to assess the association between soft drink consumption, gastric reflux, erosive tooth wear, and obesity among resident patients at the Psychiatric Hospital, Taif, Saudi Arabia. This descriptive, cross-sectional study included 223 adult psychiatric inpatients (126 male, 97 female) with a mean age of 42.3 years ( $\pm 2.2$ ). Dental erosion detection was performed according to World Health Organization criteria. The medical evaluation included assessment of the body mass index (BMI). With appropriate sample weighting, relationships between erosive tooth wear, gastric reflux, and obesity were assessed using multivariable logistic regression. Ninety eight patients (43.9%) presented with erosive tooth wear. The mean BMI for the entire study population was  $27.7 \pm 6.3$  kg/m<sup>2</sup>. Regression analysis showed a strong association between erosive tooth wear and chronic vomiting or bulimia (adjusted odds ratio = 2.11; 95% confidence interval [CI] = 1.98-5.07,  $P < .001$ ), gastric reflux (adjusted odds ratio = 2.13; 95% CI = 1.34-6.23,  $P < .001$ ), consumption of soft drinks (adjusted odds ratio = 2.14; 95% CI = 1.03-6.08,  $P < .001$ ), and schizophrenia and delusional disorders (adjusted odds ratio = 2.07; 95% CI = 1.98-5.08,  $P < .001$ ). This study demonstrates a significant association between erosive tooth wear prevalence and chronic vomiting or bulimia, consumption of soft drinks, and gastric reflux among resident patients at psychiatric hospital. DOI: 10.1097/MD.00000000000028923 PMID: 35363217 [Indexed for MEDLINE]
21. **Association between masticatory dysfunction and gastroesophageal reflux disease: A population-based study in the elderly.** J Oral Rehabil. 2023 Feb;50(2):150-156. doi: 10.1111/joor.13399. Epub 2022 Dec 19. Kuze LS(1), Fornari F(1), Collares K(1), Della Bona A(1). BACKGROUND: Caries and periodontal disease may cause tooth losses and chewing difficulty, especially in the elderly. Ingesting poorly chewed food may delay gastric emptying and favour the development of gastroesophageal reflux disease (GERD). OBJECTIVE: This study investigated the association between masticatory dysfunction and GERD in the elderly from a rural area in southern Brazil. METHODS: This census invited all 489 elderly from a city to participate. The study used a GERD symptoms questionnaire, followed by an oral examination. Masticatory dysfunction was analysed based on the chewing

difficulty for some food groups. Tooth loss and chewing self-perception were also considered as exposure variables. Poisson regression determined the association among variables by calculating the prevalence ratio [PR (95% confidence interval)]. RESULTS: The response rate was 93.1% (n = 455, average age of 70.9 years, 50.5% men). The prevalence of GERD in this population was 36.9%. GERD was associated with chewing difficulty for vegetables (PR = 1.54), meats (PR = 1.34) and cereals (PR = 1.43) but not with poor chewing self-perception (PR = 0.80) and tooth loss (PR = 1.22). GERD was also associated with xerostomia (PR = 1.63) and the female gender (PR = 1.35). CONCLUSION: Elderly people from a rural area with a reduced number of teeth present chewing difficulty and a high prevalence of GERD, indicating an association between GERD and masticatory dysfunction. DOI: 10.1111/joor.13399 PMID: 36478604 [Indexed for MEDLINE]

22. **Risk Factors for Dental Erosion After Bariatric Surgery: A Patient Survey.** *Int Dent J.* 2022 Aug;72(4):491-498. doi: 10.1016/j.identj.2021.11.001. Epub 2021 Dec 20. Alsuhaibani F(1), Alsuhaibani A(2), Ericson D(3), Larsson K(4). INTRODUCTION: Treatment of obesity by bariatric surgery has increased in recent years. Reported side effects that may predispose to dental erosion include reflux, vomiting, and an increased frequency of intake of food and drink. OBJECTIVE: The aim was to investigate long-term dietary behaviour and experiences related to symptoms of dental erosion at least 5 years after bariatric surgery. METHODS: An online questionnaire study was conducted amongst 250 patients who had undergone bariatric surgery at King Saud Medical City in Saudi Arabia 5 years ago or more. It comprised 36 questions on demographic data, dietary habits, general health, dental health, and oral symptoms. The data were analysed using Chi-square and sign tests (significance level  $P < .05$ ). RESULTS: A significant increase in acidic reflux and vomiting was found after bariatric surgery and appeared to increase with time after surgery. Also, a significant association between presence of acidic reflux and symptoms of dental erosion was found. However, 68.5% reported improved overall well-being after surgery. The response rate was 21.6% (most were female, aged 30-59 years). Respondents were generally not advised to visit a dentist in connection with bariatric surgery. CONCLUSIONS: This long-term cross-sectional study suggests a time-dependent, increasing occurrence of vomiting and acidic reflux after bariatric surgery. Vomiting and reflux became even more common after 5 to 10 years. A significant relationship emerged between a high frequency of acidic reflux and a high frequency of oral symptoms related to dental erosion. Daily occurrence of general symptoms related to dumping syndrome were reported by the majority. However, in a 5- to 10-year perspective, general symptoms related to dumping syndrome and symptoms from dental erosion did not seem to detract from the respondents' overall satisfaction with daily living. Oral health problems might be reduced if patients who had bariatric surgery were referred to a dentist for prevention and monitoring. DOI: 10.1016/j.identj.2021.11.001 PMID: 34937667 [Indexed for MEDLINE]

### Gingival enlargement/hyperplasia

23. **Levetiracetam-induced gingival hyperplasia.** *J Postgrad Med.* 2022 Jul-Sep;68(3):168-169. doi: 10.4103/jpgm.jpgm\_1059\_21. James J(1), Jose J(1), Gafoor VA(1). Levetiracetam is a new generation antiepileptic medication which binds to synaptic vesicle protein SV2A and inhibits the release of neurotransmitters. Gingival hyperplasia is a common side effect of conventional antiepileptic medications like phenytoin, but very rare with the newer ones. A 14-year-old boy was started on levetiracetam 250 mg twice daily after a generalized seizure. Five days later he presented with gingival swelling and painful oral aphthae, without lymphadenopathy or systemic symptoms. Blood investigations were normal. After one-month of stopping the drug, the lesions cleared. This case highlights the importance of maintaining good oral hygiene and periodic dental review in patients on antiepileptic medications. DOI: 10.4103/jpgm.jpgm\_1059\_21 PMID: 35848684 [Indexed for MEDLINE]
24. **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(1)(2)(3)(4)(5), Yang J(1)(2)(3). 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. DOI: 10.1111/scd.12633 PMID: 34293215 [Indexed for MEDLINE]
25. **Lamotrigine-Induced Gingival Enlargement: An Older Problem Due to a Newer Drug - A Rare Case Report.** *Clin Adv Periodontics.* 2022 Jun;12(2):130-133. doi: 10.1002/cap.10123. Epub 2020 Sep 15. Rajendran P(1). INTRODUCTION: Gingival enlargement (GE) due to anti-epileptic drugs (AEDs) shows a high prevalence rate. However, lamotrigine, a newer AED, has not shown to induce GE. The present case report describes a rare case of GE in a patient with epilepsy under lamotrigine therapy for the past 3 years. CASE PRESENTATION: In this report, successful management of lamotrigine-influenced GE in a 24-year-old patient with epilepsy by gingivectomy followed by stringent oral hygiene protocol is presented. CONCLUSION: The present case

report suggests that, even this newer AED can cause GE and the oral hygiene status of the patients could be an important triggering factor. DOI: 10.1002/cap.10123 PMID: 32852892 [Indexed for MEDLINE]

26. **Treatment of calcium channel blocker-induced gingival overgrowth without modifying medication.** Drug Ther Bull. 2022 Mar;60(3):44-47. doi: 10.1136/dtb.2021.238872rep. Epub 2021 Dec 15. 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. DOI: 10.1136/dtb.2021.238872rep PMID: 34911794 [Indexed for MEDLINE]
27. **Role of histopathology in the management of the gingival enlargement in a patient on antihypertensive therapy based on calcium channel blockers: a case report.** Rom J Morphol Embryol. 2022 Jan-Mar;63(1):253-259. doi: 10.47162/RJME.63.1.29. Păunică S(1), Zurac SA, Dumitriu AS, Popa Ș, Socoliuc CG, Giurgiu MC. Periodontal pathology is often represented by increases in gingival volume, with pronounced inflammatory phenomena. These manifestations require a more accurate diagnosis and knowledge of the etiopathogenic factors involved. The periodontal treatment applied must be related with the etiopathogenic circumstances. Periodontal disease sometimes has a complex appearance, with intertwined local and systemic favorable factors that make it difficult to include it in a certain taxonomic form. Also, in general, the adult patients have associated chronic diseases that involve the administration of several drugs, which induce on long-term both therapeutic and side effects. Furthermore, diseases in the oral cavity may occur frequently, which require complex and associated dental and periodontal treatment, also occlusal rebalancing, which is a real interdisciplinary challenge. In this case report, periodontal status is determined by a combination of local and systemic favorable factors. However, the histopathological analysis of the gingival samples revealed inflammation without characteristic fibrous hyperplasia changes of the Amlodipine calcium channel blocker (CCB) administration, the antihypertensive medication of the patient. Thus, Amlodipine does not have a hyperplastic effect on gingival mucosa in all cases. Therefore, even if they are more expensive, investigations must be complex, if necessary, in establishing the involvement of the side effect of the systemic medication in periodontal pathological changes. CCB systemic medication is essential, even vital, for maintain the arterial pressure at normal values, should not be altered without the real indication and to the recommendation from a specialist doctor, and the periodontal treatment must be focused to eliminate the local factors. DOI: 10.47162/RJME.63.1.29 PMID: 36074692 [Indexed for MEDLINE]
28. **Amlodipine Induced Gum Hypertrophy: A Rare Case Report.** Curr Drug Saf. 2022;17(3):281-283. doi: 10.2174/157488631666621122125215. Reddy SC(1), Midha N(2), Chhabra V(2), Kumar D(2), Bohra GK(2). BACKGROUND: DIGO or drug-induced gingival overgrowth occurs as a side effect of certain drugs. Until now, the etiology of drug-induced gingival overgrowth is not clearly understood. Among the calcium channel blockers, nifedipine has been shown to be most frequently associated with drug-induced gingival hyperplasia. Amlodipine is a comparatively newer calcium channel blocker that with a longer duration of action and lesser side effects as compared to nifedipine. There are only certain case reports of amlodipine-induced gum hyperplasia. CASE PRESENTATION: We report a case of amlodipine-induced gum hyperplasia in a 66-year-old hypertensive patient taking amlodipine at a dose of 5 mg once a day. There was significant regression of gum hypertrophy after substitution of amlodipine by Losartan. CONCLUSION: Amlodipine is one of the commonly prescribed antihypertensive drugs, and gingival hyperplasia is one overlooked side effect in patients taking amlodipine. Awareness of this potential side effect of amlodipine may be helpful to reduce the anxiety of patients and the cost of diagnostic procedures. DOI: 10.2174/157488631666621122125215 PMID: 34809550 [Indexed for MEDLINE]
29. **Gingival enlargement improvement following medication change from amlodipine to benidipine and periodontal therapy.** BMJ Case Rep. 2022 May 19;15(5):e249879. doi: 10.1136/bcr-2022-249879. Kamei H(1), Furui M(2), Matsubara T(3)(4), Inagaki K(5). The use of calcium channel blockers (CCBs) is associated with gingival enlargement, which adversely affects oral function, hygiene and aesthetics. Although CCB-induced gingival enlargement is a known adverse effect, it is rarely or never caused by some CCBs. In this paper, we report the case of a late 80's female patient with hypertension who experienced amlodipine-induced gingival enlargement. The patient's antihypertensive medication was changed from amlodipine to another CCB of the same class, benidipine, which has not been reported to cause gingival enlargement. The patient also received periodontal therapy. A significant improvement in gingival enlargement was noted, and blood pressure control was maintained. This case indicates that it might be beneficial for patients with hypertension presenting CCB-induced gingival enlargement to switch from

the CCB that caused gingival enlargement to another CCB with little to no risk. DOI: 10.1136/bcr-2022-249879 PMID: PMC9121430 PMID: 35589267 [Indexed for MEDLINE]

30. **Bibliometric analysis of research trends and characteristics of drug-induced gingival overgrowth.** *Front Public Health.* 2022 Sep 6;10:979861. doi: 10.3389/fpubh.2022.979861. eCollection 2022. Zhang R(1)(2)(3), Wu J(1)(2)(3), Zhu J(1)(2)(3), Wang X(4), Song J(1)(2)(3). OBJECTIVES: Drug-induced gingival overgrowth (DIGO) is a frequent adverse medication reaction that is generally caused by cyclosporine, phenytoin, and nifedipine, which belong to the category of immunosuppressants, anticonvulsants, and calcium channel blockers, respectively. This bibliometric analysis aims to depict the main citation characteristics and analyze the research trends in DIGO investigations. METHODS: An exhaustive search was performed in the Scopus database to create the bibliometric list of DIGO in the syntax. Furthermore, the information related to the number of citations, drugs related to DIGO, study topic and design, authorship, publication year, journal, contributing institution, country of origin, and the department was extracted. RESULTS: In total, 399 papers on DIGO were retrieved in this study. The total number of citations and that after the removal of self-citations were 7,814 and 7,314, respectively. The mean number of citations was 19.6 in a range of 0-608. The main paper types were articles (76.94%) and reviews (19.55%). A remarkable increasing trend in the number of citations has been observed since 1994. Cyclosporine (44.89%) is the most commonly used drug that shares a close relationship with DIGO, followed by phenytoin (18.22%), nifedipine (17.93%), and amlodipine (6.81%). The review (27.82%) type constituted the most widely used design in the DIGO studies. According to the top 20 keywords, the risk factors and pathogenesis of DIGO have been prominent topics of research works for several years. CONCLUSIONS: This bibliometric analysis will facilitate the understanding of researchers and clinicians, especially those at the beginning of their careers in periodontology on DIGO, by identifying landmark research and providing an overview of this field. DOI: 10.3389/fpubh.2022.979861 PMID: PMC9485543 PMID: 36148356 [Indexed for MEDLINE]
31. **High-power laser as a treatment of recurrent gingival fibromatosis in a patient with a rare syndrome: A case report.** *Photodermatol Photoimmunol Photomed.* 2023 Jan;39(1):75-77. doi: 10.1111/phpp.12807. Epub 2022 May 25. Anasenko S(1), Campos L(1), Gallottini M(2), Tanaka MH(1), Martins F(1). DOI: 10.1111/phpp.12807 PMID: 35559584 [Indexed for MEDLINE]
32. **Gingival hypertrophy in a kidney transplant recipient.** *Am J Transplant.* 2022 Sep;22(9):2273-2275. doi: 10.1111/ajt.17110. Mabrouk A(1), Tamzali Y(1)(2), Barrou B(1)(3), Tourret J(1)(2). DOI: 10.1111/ajt.17110 PMID: 36039542 [Indexed for MEDLINE]
33. **Amlodipine-Induced Gingival Hyperplasia in Patient Undergoing Peritoneal Dialysis.** *Skinmed.* 2022 Oct 31;20(5):392-394. eCollection 2022. Meriem BS(1), Nouha BM(2), Ines J(3), Khaled T(2), Manel BS(2), Insaf H(2), Ahmed L(2), Mouna H(2), Sabra A(2), Habib S(2). PMID: 36314711 [Indexed for MEDLINE]

#### Public Health/Access to Care

34. **The Periodontal Status of Orofacial Cleft Patients: A Systematic Review and Meta-Analysis.** *Cleft Palate Craniofac J.* 2022 Sep 21:10556656221127549. doi: 10.1177/10556656221127549. Online ahead of print. Sahni V(1), Grover V(1), Sood S(1), Jain A(1). Cleft lip and/or palate is the most commonly documented orofacial anomaly and may impact the status of health and disease of adjacent teeth along with their associated supporting structures. The authors performed a systematic review and meta-analysis to assess whether the presence of clefts altered the periodontal status of patients. The study was registered in PROSPERO (CRD42020210178). A systematic search of literature was performed utilizing unique search strings for PubMed, Scopus, and GoogleScholar as databases including gray literature from April 28, 2020 to October 3, 2020. Cross-sectional and longitudinal human studies published in the English language, providing information about periodontal disease and its association with cleft lip, alveolus, and palate. Periodontal outcome measures such as gingival index (GI), clinical attachment level (CAL), plaque index (PI), periodontal probing depth (PPD), and bleeding on probing (BOP) were utilized as the main outcome measures. Patients with clefts were predisposed to poorer periodontal outcomes. Subgroup analysis revealed compromised periodontal measures for clefts as compared to control sites without cleft which were statistically significant in terms of GI [Z = 2.44, P = .01], CAL [Z = 2.52, P = .01], PI [Z = 2.76, P = .006] and not statistically significant for PPD [Z = 0.27, P = .79] and BOP [Z = 1.47, P = .14]. Within the limitations of the review, the authors conclude that the presence of orofacial clefts may predispose to periodontal compromise when compared to normal controls. The GRADE rating was moderate. DOI: 10.1177/10556656221127549. PMID: 36130097
35. **Oral health education and promotion in special needs children: Systematic review and meta-analysis.** *Oral Dis.* 2022 Jan;28(1):66-75. doi: 10.1111/odi.13731. Epub 2020 Dec 2. Lai YYL(1)(2), Zafar S(1), Leonard HM(2), Walsh LJ(1), Downs JA(2)(3). OBJECTIVE: To review the effectiveness of oral health education and oral health promotion interventions for children and adolescents with intellectual and developmental disabilities (IDD), in ensuring optimal gingival health, caries experience and oral health-related quality of life, compared to no interventions or alternative interventions. METHODS: A systematic review was conducted to identify published studies from four databases (Medline, PsycINFO, CINAHL and ERIC). Randomised or quasi-randomised controlled trials were included. Two independent reviewers performed risk of bias and qualitative analysis. Meta-analysis was performed as appropriate. RESULTS: Eight treatment comparisons were identified. There was low certainty evidence that fluoride interventions provided long-term reductions in caries in those with IDD; and there was some evidence that

chlorhexidine albeit with low certainty provided short-term and long-term reductions in plaque and gingivitis. There was moderate certainty evidence for short-term reductions in dental plaque from the use of modified toothbrushes, but not compelling evidence for powered toothbrushes. CONCLUSIONS: Most studies provided a low quality of evidence, and so any adaptations made to oral health practices of individuals with IDD need to consider their individual needs. PROSPERO registration: CRD42019145784. DOI: 10.1111/odi.13731 PMID: 33215786 [Indexed for MEDLINE]

- 36. Qualitative inquiry from multiple perspectives of barriers and facilitators of oral health care for adults with disabilities.** Spec Care Dentist. 2023 Jan;43(1):47-55. doi: 10.1111/scd.12734. Epub 2022 May 30. Chavis SE(1), Roth E(2), Dababnah S(3), Tepper V(4), Badawi DG(4), Mullins CD(2). AIMS: Adults with special health care needs (ASHCN) face significant disparities in access to oral health care and subsequent health outcomes, resulting from several etiologies. This study investigated perspectives of patients, caregivers, and providers to better understand care barriers and facilitators for ASHCN. METHODS: We conducted 26 semi-structured interviews with a purposive sample from an academic clinic specializing in oral health care for ASHCN with disabilities [patients (N = 4), caregivers (N = 8), and providers (N = 14)], and thematically analyzed transcripts for care barriers and facilitators. RESULTS: Three overarching themes that encompassed overlapping barriers and facilitators of oral health care for ASHCN emerged: relational aspects, provider training/experience, and infrastructure aspects. Themes include intersecting perceptions of factors that hinder or help oral health care and management of ASHCN. CONCLUSIONS: Building relationships with patients, inherent empathetic provider characteristics, and accommodating clinical infrastructure are imperative to facilitate oral health care for ASHCN. The primary themes revealed in this study are facilitators to care when they are present, and barriers to care when they are absent. No individual theme stands alone as a single contributor to quality care, and the provision of care for ASHCN relies on coordination of providers, patients, caregivers, and the overarching infrastructure. DOI: 10.1111/scd.12734 PMID: 35636426 [Indexed for MEDLINE]
- 37. Consideration of oral health in rare disease expertise centres: a retrospective study on 39 rare diseases using text mining extraction method.** Orphanet J Rare Dis. 2022 Aug 20;17(1):317. doi: 10.1186/s13023-022-02467-7. Friedlander L(1)(2)(3)(4), Vincent M(5), Berdal A(6)(7)(8)(9), Cormier-Daire V(5)(10), Lyonnet S(5)(10), Garcelon N(5). BACKGROUND: Around 8000 rare diseases are currently defined. In the context of individual vulnerability and more specifically the one induced by rare diseases, ensuring oral health is a particularly important issue. The objective of the study is to evaluate the pattern of oral health care course for patients with any rare genetic disease. Description of oral phenotypic signs-which predict a theoretical dental health care course-and effective orientation into an oral healthcare were evaluated. MATERIALS AND METHODS: We set up a retrospective cohort study to describe the consideration of patient oral health and potential orientation to an oral health care course who have at least been seen once between 1 January 2017 and 1 January 2020 in Necker Enfants Malades Hospital. We recruited patients from this study using the data warehouse, Dr Warehouse® (DrWH), from Necker-Enfants Malades Hospital. RESULTS: The study sample included 39 rare diseases, 2712 patients, with 54.7% girls and 45.3% boys. In the sample studied, 27.9% of patients had an acquisition delay or a pervasive developmental disorder. Among the patient files studied, oral and dental phenotypic signs were described for 18.40% of the patients, and an orientation in an oral healthcare was made in 15.60% of patients. The overall "network" effect was significantly associated with description of phenotypic signs (corrected p = 1.44e-77) and orientation to an oral healthcare (corrected p = 23.58e-44). Taking the Defiscience network (rare diseases of cerebral development and intellectual disability) as a reference for the odd ratio analysis, OSCAR, TETECO, FILNEMUS, FIMARAD, MHEMO networks stand out from the other networks for their significantly higher consideration of oral phenotypic signs and orientation in an oral healthcare. CONCLUSION: To our knowledge, no study has explored the management of oral health in so many rare diseases. The expected benefits of this study are, among others, a better understanding, and a better knowledge of the oral care, or at least of the consideration of oral care, in patients with rare diseases. Moreover, with the will to improve the knowledge on genetic diseases, oral health must have a major place in the deep patient phenotyping. Therefore, interdisciplinary consultations with health professionals from different fields are crucial. DOI: 10.1186/s13023-022-02467-7 PMID: 35987771 [Indexed for MEDLINE]
- 38. Oral Health Barriers for African American Caregivers of Autistic Children.** Int J Environ Res Public Health. 2022 Dec 19;19(24):17067. doi: 10.3390/ijerph192417067. Como DH(1), Floríndez-Cox LI(2), Stein Duker LI(1), Cermak SA(1). The most persistent oral health disparities in the United States impact children from racial and ethnic minoritized groups and children diagnosed as autistic. This paper aims to describe barriers to oral care as depicted by Black/African American (B/AA) parents of autistic children to further explore how and why oral health disparities persist in this population. A purposeful sample of eleven caregivers of autistic children, ages 4 to 14 years, who identified as B/AA were interviewed twice for approximately 60-90 min each. Thematic analysis utilizing a narrative approach was employed. Three themes emerged from the data concerning the barriers that affect oral health experiences: (a) difficulty in maintaining good oral health practices, (b) challenges with access to care and resources, and (c) poor patient-provider relationships. Due to the limited research that examines the intersection of autism, B/AA culture, and oral health practices, this study provides a rich picture of the barriers families face when obtaining oral care. Many families raised issues that other parents of autistic children also identified. B/AA caregivers have demonstrated that

despite their own negative dental experiences, they understand the value of good oral care practices and are willing to pursue oral care for their children. DOI: 10.3390/ijerph192417067 PMID: PMC9779821 PMID: 36554947 [Indexed for MEDLINE]

- 39. Dental Service and Resource Needs during COVID-19 among Underserved Populations.** JDR Clin Trans Res. 2022 Jul;7(3):315-325. doi: 10.1177/23800844221083965. Epub 2022 Mar 17. Johnson V(1), Brondani M(1), von Bergmann H(1), Grossman S(2), Donnelly L(1). INTRODUCTION: In response to the coronavirus disease 2019 (COVID-19) outbreak, dental services in British Columbia, Canada, were restricted to urgent and emergency cases between March 16 and May 18, 2020. It is unclear how the curtailment of oral health services has affected underserved populations who already often have limited access to dental care due to cost, fear, stigma, and discrimination. OBJECTIVES: To explore the experiences of underserved populations and their community organizations when accessing oral health services and information in British Columbia and identify their coping mechanisms employed during the curtailment of oral health care services. METHODS: Semistructured, remote interviews were conducted with 13 staff and 18 members from 6 community-based organizations. These organizations serve men and women with a history of incarceration and/or experiencing poverty and homelessness, persons living with human immunodeficiency virus/AIDS, adults living with mental illness, and older adults in long-term care facilities. The interviews were audio-recorded, transcribed verbatim, and coded for emerging themes using NVivo 12 software. Thematic analysis was performed. RESULTS: The pandemic raised concerns and hesitancy among underserved populations and further reduced access to care. In turn, those with unmet dental needs resorted to coping mechanisms, including turning to community support or medical services, self-management of dental issues, and not dealing with dental issues altogether. Community organizers and members outlined needed resources such as assistance navigating the dental care system, having a contact for dental-related questions, and member preparation for dental service changes, while emphasizing the importance of positive relationships with dental providers. CONCLUSION: Underserved populations who already face barriers to oral health care services experienced increased difficulty in addressing their oral health needs and concerns during the beginning of the COVID-19 pandemic. Strategies aimed at reaching out to this population and those who support them are needed to help mitigate negative coping strategies and increased oral health disparities. KNOWLEDGE TRANSFER STATEMENT: This study depicts ways of addressing unmet oral health-related issues during the COVID-19 pandemic for underserved populations and their community organizations with policy implications as well as practical strategies. DOI: 10.1177/23800844221083965 PMID: PMC9203663 PMID: 35298308 [Indexed for MEDLINE]
- 40. Oral health needs of U.S. children with developmental disorders: a population-based study.** BMC Public Health. 2022 Apr 29;22(1):861. doi: 10.1186/s12889-022-13237-2. Obeidat R(1), Noureldin A(2), Bitouni A(3), Abdellatif H(4), Lewis-Miranda S(3), Liu S(5), Badner V(6), Timoth e P(2). BACKGROUND: Children with Special Health Care Needs (CSHCN) have higher rates of oral diseases and tooth decay compared with the general population. Children with developmental disorders/ disabilities (DD) are a subset of CSHCN whose oral health has not been specifically addressed. Therefore, this study had two objectives: to describe the oral health needs (OHN) of children with DD compared with children without DD; and to assess barriers to access to care, utilization of dental services, and their association with oral health needs for children with DD. METHODS: This cross-sectional study utilized a sample of 30,530 noninstitutionalized children from the 2018 National Survey of Children's Health (NSCH). Analysis was conducted using descriptive and inferential statistics. RESULTS: The analysis identified 6501 children with DD and 24,029 children without DD. Children with DD had significantly higher prevalence of OHN (20.3% vs. 12.2%, respectively), unmet dental needs (3.5% vs 1.2%), and utilization of any dental visits (86.1% vs 76.1%), (P-value < .001). The adjusted logistic model identified four factors that contributed to the higher odds of OHN among children with DD: poverty (< 100% of the Federal Poverty Level (AOR = 2.27, CI: 1.46-3.51), being uninsured (AOR = 2.12, 95% CI: 1.14-3.95), a high level of disability (AOR = 1.89, CI: 1.23-2.78), and living in the western United States (AOR = 1.61, CI: 1.09-2.37. CONCLUSION: Despite higher utilization of dental services, children with DD had poorer oral health and more unmet dental needs than children without DD. Advocacy efforts and policy changes are needed to develop affordable access that assesses, as early as possible, children with DD whose conditions impact their ability a great deal so that their potential OHN may be alleviated more effectively. DOI: 10.1186/s12889-022-13237-2 PMID: PMC9055681 PMID: 35488224 [Indexed for MEDLINE]
- 41. Transition to adult dental care from a pediatric hospital dental home for patients with special health care needs.** Spec Care Dentist. 2022 Jul;42(4):333-342. doi: 10.1111/scd.12690. Epub 2022 Jan 7. Mikkelson A(1), Sheller B(2), Williams BJ(2), Churchill SS(3), Friedman C(4). AIMS: This study describes patients with complex Special Health Care Needs (SHCN) transitioning from a pediatric hospital clinic dental home to adult care and evaluates effectiveness of transition practices. METHODS AND RESULTS: Demographics, medical/behavioral complexity, and documentation of transition processes were collected for patients graduated from the service in 2018/2019. An invitation to complete a survey assessing transition was sent to patients/guardians ≥ 14 months after the final visit. Seventy-nine patients graduated and 94% required accommodation for SHCN: 47% medical, 42% medical + behavioral, and 5% behavioral only. Of 63 eligible patients/guardians, 29 completed surveys. While 90% of surveyed patients had established some/all adult medical care, only 41% completed a dental visit, and less than 28% established a dental home. Medical/behavioral complexity, payer, and time since graduation did not impact having a visit. CONCLUSIONS: This study

found ineffectiveness of departmental protocol for transition to adult dental homes for patients with SHCN. Developing an optimal transition process is complex and will require collaboration of all stakeholders. Introducing transition in early teen years, tracking progress at subsequent visits, assessing patient readiness, summarizing history for receiving providers, and verifying transition are elements of medical transition programs that should be included in dental transitions. DOI: 10.1111/scd.12690 PMID: 34997629 [Indexed for MEDLINE]

- 42. Challenges experienced in the dental care of persons with special needs: a qualitative study among health professionals and caregivers.** BMC Oral Health. 2022 Apr 9;22(1):116. doi: 10.1186/s12903-022-02153-x. Balkaran R(1)(2), Esnard T(1), Perry M(3), Virtanen JI(4)(5). BACKGROUND: This study aimed to explore the challenges experienced in dental health care by professionals and caregivers of persons with special needs in Trinidad and Tobago. This research presented results from the first qualitative study which gained insight into the service component of dental care for people with special needs in this country. METHODS: This qualitative study was conducted between March and June 2021. Recruitment of participants used both purposive and snowball sampling. A semi-structured interview schedule was used in the interviews of dentists, (a dental assistant), physicians and caregivers of people with special needs. Narrative inquiry was used in data analysis. The transcripts were individually coded and a follow-up peer debriefing session to cross reference responses and increase the validity of the analysis was performed. RESULTS: Barriers related to the provision of dental care included readiness of health care professionals, the level of specialized care and the resources required for patient treatment. Caregivers encountered barriers such as cost and lack of accessible dental care for persons with special needs. Possible solutions were education of key stakeholders, policy intervention, advocacy and prevention strategies. CONCLUSIONS: Caregivers and allied health care professions experience multiple barriers when treating patients with special needs. Study participants indicated a need change in the provision and access of dental services for people with special needs. Education of healthcare professionals, improved social policies and health promotion is warranted. DOI: 10.1186/s12903-022-02153-x PMID: 35397582 [Indexed for MEDLINE]
- 43. Specialist Networks Influence Clinician Willingness to Treat Individuals with Special Needs.** JDR Clin Trans Res. 2022 Jul;7(3):267-276. doi: 10.1177/23800844211020250. Epub 2021 Jun 21. Lim MAWT(1)(2)(3), Liberali SAC(4)(5), Calache H(1)(6), Parashos P(1), Borromeo GL(1). BACKGROUND: The South Australian Dental Service's Special Needs Network was established to support oral health professionals working within their statewide government-funded dental service to treat patients with special needs. This study aimed to investigate how a structured network relationship with specialists in special needs dentistry influenced the willingness of dentists to treat this group of patients. METHODS: Semi-structured interviews were used to explore the views of specialists and dentists involved in the South Australian Dental Service's Special Needs Network. Inductive thematic analysis identified emerging themes enabling completion of a SWOT (strengths, weaknesses, opportunities, threats) analysis. RESULTS: Dentists felt that a strength of the Network was a greater sense of collegiality, particularly for those working in rural areas. Although the inability to get immediate advice was seen as a weakness, dentists felt a more structured relationship with specialists improved communication pathways and resulted in more timely care. The aging workforce, systemic barriers in the public dental system, such as productivity pressures and infrastructure, and the lack of support from other health professionals were seen as ongoing barriers and threats. Regardless, dentists identified the use of telehealth and visiting specialists as future opportunities. Specialists felt that the Network was a valuable resource but were skeptical about its effectiveness, feeling that a limitation was the ability of dentists to recognize the complexity of cases. CONCLUSIONS: Ongoing support from and communication with specialists in special needs dentistry through a structured network improved the perceived ability and willingness of dentists to treat patients with special needs. KNOWLEDGE TRANSFER STATEMENT: This research suggests that providing support to dentists through a hub-and-spoke network that facilitates additional training, professional interaction, and improved communication with specialists in special needs dentistry may help overcome some of the current barriers to access to care experienced by individuals with special needs, particularly those associated with the willingness and capability of clinicians treat them. DOI: 10.1177/23800844211020250 PMID: 34148391 [Indexed for MEDLINE]
- 44. Effects of a Medicaid dental coverage "cliff" on dental care access among low-income Medicare beneficiaries.** Health Serv Res. 2023 Jun;58(3):589-598. doi: 10.1111/1475-6773.13981. Epub 2022 Apr 9. Roberts ET(1), Mellor JM(2), McInerney MP(3), Sabik LM(1). OBJECTIVE: To evaluate how an abrupt drop-off, or "cliff," in Medicaid dental coverage affects access to dental care among low-income Medicare beneficiaries. Medicaid is an important source of dental insurance for low-income Medicare beneficiaries, but beneficiaries whose incomes slightly exceed eligibility thresholds for Medicaid have fewer affordable options for dental coverage, resulting in a dental coverage cliff above these thresholds. DATA SOURCE: Medicare Current Beneficiary Surveys (MCBS) from 2016 to 2019. STUDY DESIGN: We used a regression discontinuity design to evaluate effects of this dental coverage cliff. This study design exploited an abrupt difference in Medicaid coverage above income eligibility thresholds in the Medicaid program for elderly and disabled populations. DATA COLLECTION: The study included low-income community-dwelling Medicare beneficiaries surveyed in the MCBS whose incomes, measured in percentage points of the federal poverty level, were within  $\pm 75$  percentage points of state-specific Medicaid income eligibility thresholds ( $n = 7508$  respondent-years, which when weighted represented 26,776,719 beneficiary-years). PRINCIPAL FINDINGS: Medicare beneficiaries whose income exceeded

Medicaid eligibility thresholds were 5.0 percentage points more likely to report difficulty accessing dental care due to cost concerns or a lack of insurance than beneficiaries below the thresholds (95% CI: 0.2, 9.8;  $p = 0.04$ )-a one-third increase over the proportion reporting difficulty below the thresholds (15.0%). CONCLUSIONS: A Medicaid dental coverage cliff exacerbates barriers to dental care access among low-income Medicare beneficiaries. Expanding dental coverage for Medicare beneficiaries, particularly those who are ineligible for Medicaid, could alleviate barriers to dental care access that result from the lack of comprehensive dental coverage in Medicare. DOI: 10.1111/1475-6773.13981 PMID: PMC10154168 PMID: 35362157 [Indexed for MEDLINE]

- 45. Oral health-related quality of life in children with osteogenesis imperfecta.** Eur Arch Paediatr Dent. 2022 Apr;23(2):261-270. doi: 10.1007/s40368-021-00664-9. Epub 2021 Nov 20. Cachia Mintoff JM(1)(2)(3), Riddington M(2)(4), Parekh S(5)(6). PURPOSE: Osteogenesis imperfecta (OI) results from mutations in the genes involved in the modification or biosynthesis of collagen. This study aimed to assess the oral health-related quality of life (OHRQoL) in children with OI. METHODOLOGY: Participants were recruited from a highly specialised OI centre for children. The Child Oral-Health Impact Profile-Short Form (COHIP-SF) was used, adding demographic and qualitative questions. Children aged 8-16 years participated between January and October 2019. Statistical analysis was carried out. A higher COHIP-SF score indicates better OHRQoL (maximum score, 76). RESULTS: One hundred and six (106) children participated (44 female, mean age 11.93 years). COHIP-SF median score was 59. Children reporting mild OI ( $n = 55$ ) had higher median scores (62) compared to severe OI ( $n = 7$ ) with median scores of 55 ( $P = 0.087$ ). When comparing mixed ( $< 12$  years,  $n = 46$ ) and permanent dentition ( $\geq 12$ ,  $n = 60$ ), no significant difference in OHRQoL was seen ( $P = 0.977$ ). There was no significant difference between severities for each COHIP-SF domain. Limited data on the presence of dentinogenesis imperfecta did not impact overall score ( $P = 0.109$ ), but was significant in the oral-health domain ( $P = 0.033$ ). QUALITATIVE: Common themes were the need for braces, discolouration, pain and function. CONCLUSION: This study confirmed that children with OI have dental concerns in areas including oral health, functional well-being and socio-emotional well-being. This was related to severity of OI. DOI: 10.1007/s40368-021-00664-9 PMID: PMC8994709 PMID: 34799841 [Indexed for MEDLINE]
- 46. Silver diamine fluoride and oral health-related quality of life: A review and network meta-analysis.** PLoS One. 2022 Feb 1;17(2):e0261627. doi: 10.1371/journal.pone.0261627. eCollection 2022. Ruff RR(1), Whittemore R(1), Grochecki M(1), Bateson J(1), Barry Godín TJ(1). OBJECTIVE: Silver diamine fluoride (SDF) is an effective non-surgical treatment for dental caries which may also impact oral health-related quality of life (OHRQoL). The objective of this study was to conduct a network meta-analysis of SDF versus other standard of care therapies on OHRQoL. DATA SOURCES: Studies published in PubMed/MEDLINE, Scopus, or Web of Science through July 2021 with no date or language restrictions. STUDY SELECTION: Any randomized controlled trial, cohort, or case-control study that included silver diamine fluoride as either a single or combinative treatment for dental caries and a quantitatively measured outcome for oral health-related quality of life was included. DATA EXTRACTION AND SYNTHESIS: Potentially eligible studies were screened by two independent reviewers trained in conducting systematic reviews. Studies meeting inclusion criteria underwent a full-text review with data being extracted using a standardized form, including publication details, study methodology, outcomes, assessors, and sample information. Studies underwent a risk of bias assessment. Quantitative synthesis was performed using fixed effects meta-analysis and individual comparisons were assessed via network meta-analysis. MAIN OUTCOME(S) AND MEASURE(S): Oral health-related quality of life. RESULTS: 19 articles were returned following search strategies. Following screening, ten studies were evaluated for full-text eligibility and five were retained for meta-analyses. Results across all treatments indicate no differences in OHRQoL when compared to SDF (SMD = -0.06, 95% CI = -0.20, 0.08). Direct and indirect estimates from network meta-analysis indicated that OHRQoL in children was not significantly different when treated with SDF versus atraumatic restorations ( $d = 0.02$ , 95% CI = -0.32, 0.36) or placebo ( $d = 0.03$ , 95% CI = -0.16, 0.22). CONCLUSIONS: Evidence from the literature consistently shows no discernible impact on OHRQoL across various non-surgical treatments for dental caries. Overall oral health-related quality of life may increase regardless of treatment protocol due to treatment of the underlying disease. Concerns over the staining of dental decay and oral mucosa resulting from treatment with silver diamine fluoride do not seem to affect OHRQoL. DOI: 10.1371/journal.pone.0261627 PMID: PMC8806055 PMID: 35104291 [Indexed for MEDLINE]
- 47. Influence of clinical and demographic factors on the oral health-related quality of life of patients with cleft lip and palate undergoing orthodontic treatment: a systematic review and meta-analysis.** Eur J Orthod. 2022 May 24;44(3):268-278. doi: 10.1093/ejo/cjab074. Nascimento VC(1), Martins MME(1), Vilella BS(1), Mattos CT(1), Vilella OV(1). OBJECTIVE: The purpose of this study was to evaluate the influence of orthodontic treatment on the oral health-related quality of life (OHRQoL) of patients with cleft lip and palate. SEARCH METHODS: Electronic searches were conducted in Pubmed, Scopus, Web of Science, Cochrane Library, VHL, and OpenGrey databases, completed in January 2021. SELECTION CRITERIA: Cross-sectional and longitudinal observational studies that presented an assessment of OHRQoL in cleft patients undergoing orthodontic treatment were included, according to PRISMA guidelines. Contacts via email were made with authors, to clarify inaccuracies or request additional data. DATA COLLECTION AND ANALYSIS: The entire process was accomplished by two authors, in case of

disagreement, a third author mediated the discussion until there was a consensus. Risk assessment was performed by the Fowkes and Fulton qualifier, and the quality of evidence, assessed by the Grading of Recommendations, Assessment, Development and Evaluation (GRADE) tool. A meta-analysis was performed considering the domains combined into three large groups (physical, psychological, and social). The questionnaires were standardized as to the scores and their direction. RESULTS: A total of 3822 studies were retrieved. After excluding duplicates, the titles and abstracts of the remaining articles were analysed. Twenty-eight articles were read in full; 13 met the eligibility criteria; 12 articles showed sufficient methodological quality and 7 were included in the quantitative assessment. The included studies were published between 2011 and 2019. The samples comprised 19 to 183 patients of both sexes. GRADE showed low evidence when compared to the control group, sexes, age, and types of cleft and very low evidence among longitudinal articles. CONCLUSIONS: The OHRQoL is lower in orthodontic patients with cleft than in those without. The OHRQoL of patients with cleft undergoing orthodontic treatment is not influenced by gender or age group, considering children and adolescents, but it is influenced by the type of cleft. The OHRQoL of patients with CLP does not undergo significant changes during orthodontic treatment. LIMITATIONS: The variety of instruments for measuring OHRQoL rendered meta-analysis difficult. REGISTRATION: PROSPERO database number CRD42017054764. DOI: 10.1093/ejo/cjab074 PMID: 34891156 [Indexed for MEDLINE]

- 48. Association of the estrogen receptor gene with oral health-related quality of life in patients with dentofacial deformities.** Braz Oral Res. 2022 Jul 11;36:e089. doi: 10.1590/1807-3107bor-2022.vol36.0089. eCollection 2022. Machado NC(1), Gerber JT(1), Santos KMD(1), Bergamaschi IP(2), Meger MN(1), Costa DJD(2), Küchler EC(3), Scariot R(2). This study aimed to evaluate the associations between oral health-related quality of life (OHRQoL) and patient-associated factors and polymorphisms in the estrogen receptor 1 (ESR1) and 2 (ESR2) genes in patients with dentofacial deformities (DFD). This cross-sectional study included 234 adult individuals. Data such as age, sex, and the type of facial profile (I, II, or III), were collected, and the short-form oral health impact profile 14 (OHIP-14) questionnaire was used to assess their OHRQoL. DNA was collected from oral mucosa cells, and the polymorphisms in ESR1 (rs2234693 and rs9340799) and ESR2 (rs1256049 and rs4986938) were evaluated using real-time polymerase chain reaction. The data were subjected to statistical analysis at a significance level of 5%. Individuals over 28 years of age exhibited worse OHRQoL ( $p = 0.003$ ) than individuals aged less than or equal to 28 years. Women had worse OHRQoL than men ( $p < 0.001$ ). Profile II individuals had worse OHRQoL in the social disability domain than profile III individuals ( $p = 0.030$ ). Genetic analysis showed that rs9340799 was associated with OHRQoL in the functional limitation domain, and GG individuals exhibited worse OHRQoL than individuals carrying the AA/AG genotypes ( $p < 0.030$ ). In the social handicap domain, individuals with GG genotype in rs9340799 exhibited worse OHRQoL than AG individuals ( $p < 0.043$ ). Collectively, our results reveal that factors including age, sex, and type of facial profile, are associated with OHRQoL in patients with DFD. In addition, individuals with the GG genotype in rs9340799 (ESR1) may experience a negative impact on OHRQoL in the functional limitation and social handicap domains. DOI: 10.1590/1807-3107bor-2022.vol36.0089 PMID: 35830136 [Indexed for MEDLINE]
- 49. Evaluating the Oral-Health-Related Quality of Life of Oral Submucous Fibrosis Patients before and after Treatment Using the OHIP-14 Tool.** Int J Environ Res Public Health. 2022 Feb 5;19(3):1821. doi: 10.3390/ijerph19031821. Memon AB(1)(2), Rahman AAU(1)(3), Channar KA(4), Zafar MS(5)(6), Kumar N(1)(7). The objective of the present study was to assess the oral-health-related quality of life (OHRQoL) of oral submucous fibrosis (OSMF) patients before and after standard treatment. A convenient sampling technique was used to recruit the clinically diagnosed patients of OSMF ( $n = 130$ ). Based on the medical treatment, the patients were randomly divided into two study groups (group A and B). The group A patients received submucosal intralesional injections of dexamethasone (2 mL; 4 gm/mL), while group B patients received hyaluronidase (1500 IU). Both the group A and B patients received respective medical therapy biweekly for a period of five weeks. At the follow up visit (6 months), the impact of treatment on OHRQoL was assessed using the Oral Health Impact Profile-14 (OHIP-14). Data were analyzed by a chi-square test for quantitative variables and an independent t-test for qualitative variables. The comparison of all clinical parameters before and after treatment was performed by a paired t-test. The results after treatment showed that there was a significant improvement in all domains of OHIP-14 ( $p = 0.001$ ) except psychological disability ( $p = 0.243$ ). In addition, the OHRQoL of patients was significantly improved following the treatment. DOI: 10.3390/ijerph19031821 PMID: 35162842 [Indexed for MEDLINE]
- 50. Impact of dental caries on oral health-related quality of life in children with dental behavior management problems.** Braz Oral Res. 2022 Mar 14;36:e041. doi: 10.1590/1807-3107bor-2022.vol36.0041. eCollection 2022. Corrêa-Faria P(1), Silva KC(2), Costa LR(3). The aim of this cross-sectional study was to evaluate the impact of dental caries and sociodemographic factors on the oral health-related quality of life (OHRQoL) of children with dental behavior management problems (DBMP) and their families. One hundred and thirty-four dyads of caregivers and children participated. The impact of OHRQoL was assessed using the Brazilian version of the Early Childhood Oral Health Impact Scale (ECOHIS). Socioeconomic variables were obtained from an interview. Dental caries was assessed using the dmft index. The total B-ECOHIS score was categorized as low, medium, or high impact, and its association with the independent variables was determined based on bivariate tests and a multivariate model. The median score for B-ECOHIS was 13 (range: 1-40). The negative impact was reflected mainly by complaints of oral/dental pain, difficulty in

eating and parental guilt. The number of teeth with caries was significantly higher among children who experienced a high negative impact on OHRQoL (mean 9.2 [standard deviation 3.5];  $p = 0.003$ ) than those who had a low negative impact (7.0 [3.3]). The final adjusted model showed that dental caries remained independently associated with poor OHRQoL ( $b = 0.100$ ;  $x^2$  Wald 4.205;  $p = 0.040$ ). A greater impact on OHRQoL was experienced by children with DBMP and greater caries experience. DOI: 10.1590/1807-3107bor-2022.vol36.0041 PMID: 35293506 [Indexed for MEDLINE]

- 51. Critically engaging vulnerability: Rethinking oral health with vulnerabilized populations.** *Community Dent Oral Epidemiol.* 2022 Dec;50(6):469-475. doi: 10.1111/cdoe.12703. Epub 2021 Nov 9. Macdonald ME(1), Muirhead V(2), Doughty J(3), Freeman R(4). Comment in *Br Dent J.* 2021 Dec;231(11):703. This paper is the third in a series of narrative reviews challenging core concepts in oral health research and practice. Our series started with a framework for Inclusion Oral Health. Our second review explored one component of this framework, looking at how intersectionality adds important complexity to oral public health. This current manuscript drills into a second component of Inclusion Oral Health, exploring how labels can lead to 'othering' thereby misrepresenting populations and (re)producing harms. Specifically, we address a common oral public health label: vulnerable populations. This term is commonly used descriptively: an adjective (vulnerable) is used to modify a noun (population). What this descriptor conceals is the 'how,' 'why,' and 'therefore' that leads to and from vulnerability: How and why is a population made vulnerable; to what are they vulnerable; what makes them 'at risk,' and to what are they 'at risk'? In concealing these questions, we argue our conventional approach unwittingly does harm. Vulnerability is a term that implies a population has inherent characteristics that make them vulnerable; further, it casts populations as discrete, homogenous entities, thereby misrepresenting the complexities that people live. In so doing, this label can eclipse the strengths, agency and power of individuals and populations to care for themselves and each other. Regarding oral public health, the convention of vulnerability averts our research gaze away from social processes that produce vulnerability to instead focus on the downstream product, the vulnerable population. This paper theorizes vulnerability for oral public health, critically engaging its production and reproduction. Drawing from critical public health literature and disability studies, we advance a critique of vulnerability to make explicit hidden assumptions and their harmful outcomes. We propose solutions for research and practice, including co-engagement and co-production with peoples who have been vulnerabilized. In so doing, this paper moves forward the potential for oral public health to advance research and practice that engages complexity in our work with vulnerabilized populations. DOI: 10.1111/cdoe.12703 PMID: 34751455 [Indexed for MEDLINE]
- 52. Oral health issues in children and adolescents with vision impairment: A systematic review and meta-analysis.** *Int J Paediatr Dent.* 2022 Nov;32(6):877-893. doi: 10.1111/ipd.12967. Epub 2022 May 5. Costa Silva-Freire L(1), Guimaraes MO(1), Abreu LG(1), Vargas-Ferreira F(2), Vieira-Andrade RG(1). BACKGROUND: Children and adolescents with vision impairment (VI) may be at increased risk of oral health issues, such as periodontal inflammation, poor oral hygiene, dental caries, and dental trauma, but this is inconclusive in the literature. AIM: To systematically review the literature to determine the main oral health issues of children and adolescents with VI compared to those without VI. DESIGN: Electronic and manual searches were performed to identify observational studies involving children and adolescents with and without VI, to determine and compare their oral health issues. The methodological quality was assessed using the Joanna Briggs Institute critical appraisal tool. Studies that had homogeneity of methods were incorporated into meta-analyses. RESULTS: Fifteen cross-sectional studies were included. Overall, most studies presented methodological flaws and high risk of bias. The meta-analysis showed that children and adolescents with VI were 3.86 times as likely to exhibit dental trauma (OR = 3.86, 95% CI = 2.63-5.68, I<sup>2</sup> = 0%) and had higher/poorer values for plaque (MD = 0.80, 95% CI = 0.58-1.02, I<sup>2</sup> = 96%), gingivitis (MD = 0.69, 95% CI = 0.02-1.37, I<sup>2</sup> = 100%), calculus (MD = 0.04, 95% CI = 0.03-0.06, I<sup>2</sup> = 0%), and oral hygiene indices (MD = 0.71, 95% CI = 0.24-1.18, I<sup>2</sup> = 97%), as well as DMFS (MD = 0.90, 95% CI = 0.68-1.13, I<sup>2</sup> = 26%). CONCLUSION: Across a wide array of assessments, children and adolescents with vision impairment had worse oral health outcomes than those without VI. DOI: 10.1111/ipd.12967 PMID: 35445456 [Indexed for MEDLINE]
- 53. Racial/ethnic health disparities among children with special health care needs in Boston, Massachusetts.** *Disabil Health J.* 2022 Jul;15(3):101316. doi: 10.1016/j.dhjo.2022.101316. Epub 2022 Mar 10. Dembo RS(1), LaFleur J(2), Akobirshoev I(3), Dooley DP(4), Batra N(4), Mitra M(3). BACKGROUND: Little is known about the factors that contribute to racial/ethnic disparities among children with special health care needs (CSHCN). OBJECTIVE: To quantify the contributions of determinants of racial/ethnic disparities in health and health care among CSHCN in Boston, Massachusetts. METHODS: A sample of 326 Black, Latino, and white CSHCN was drawn from the Boston Survey of Children's Health, a city-wide representative sample of children. The study implemented Oaxaca-Blinder-style decomposition techniques to examine the relative contributions of health resources and child-, family-, and neighborhood-level factors to disparities in four outcomes: health status, barriers to medical care, oral health status, and utilization of preventive dental care. RESULTS: White CSHCN had a greater likelihood of having very good/excellent health and oral health and were less likely to experience barriers to care than Black CSHCN. Compositional differences on predictors explained 63%, 98%, and 80% of these gradients, respectively. Group variation in household income, family structure, neighborhood support, and exposure to adverse childhood experiences accounted for significant portions of the Black-white

gaps in health and access. White CSHCN were also more likely to have very good/excellent health and oral health compared to Latino CSHCN. Differences on predictors accounted for about 86% and 80% of these gaps, respectively. Household income, adverse childhood experiences, and household language emerged as significant determinants of Latino-white disparities. CONCLUSIONS: Racial/ethnic health disparities among CSHCN are explained by relatively few determinants. Several of the contributing factors that emerged from the analysis and could be targeted by public health and policy interventions. DOI: 10.1016/j.dhjo.2022.101316 PMID: 35387761 [Indexed for MEDLINE]

- 54. Impact of disability diagnosis on dental care use for adults in the United States: Status matters.** J Am Dent Assoc. 2022 Aug;153(8):797-804. doi: 10.1016/j.adaj.2022.03.002. Epub 2022 May 5. Chavis SE, Macek M. BACKGROUND: Approximately 25% of adults in the United States have a disability that limits function and independence. Oral health care represents the most unmet health care need. This population has been found to have decreased oral health outcomes compared with the general population. METHODS: The authors used the 2018 adult National Health Interview Survey to assess the association between disability status and dental care use (dental visit within or > 2 years). Disability status was categorized as adults with an intellectual, acquired, or developmental disability (IADD) that limits function, other disability that limits function, or no disability, on the basis of diagnoses of birth defect, developmental diagnosis, intellectual disability, stroke, senility, depression, anxiety, or emotional problem, all causing problems with function. RESULTS: Adults with an IADD with functional and independence-limiting disabilities experienced higher crude odds of going 2 years or more without a dental visit than adults without disabilities (odds ratio [OR], 2.29; 95% CI, 1.96 to 2.67). This association was part of a significant interaction and was stronger among those with IADDs who could afford oral health care (OR, 1.73; 95% CI, 1.47 to 2.14) than among those who could not afford oral health care (OR, 1.21; 95% CI, 0.88 to 1.67; P value of interaction <.01). CONCLUSIONS: Adults with IADDs have decreased access to oral health care compared with adults with other disabilities or without disabilities. The inability to afford oral health care lessens the impact of disability status. PRACTICAL IMPLICATIONS: Dentists can use this study to understand the implications of IADD diagnoses on dental care use and make efforts to facilitate care for these patients. DOI: 10.1016/j.adaj.2022.03.002 PMID: PMC9339456 PMID: 35527037 [Indexed for MEDLINE]
- 55. Sociodemographic factors affect the quality of life and burden of caregivers in special care in dentistry.** Spec Care Dentist. 2022 Sep;42(5):464-475. doi: 10.1111/scd.12710. Epub 2022 Mar 24. Magalhães IA(1), Dantas TS(2), de Paulo JPM(3), Marçal FF(4), Viana TSA(2), Sousa FB(2)(5), Barros Silva PG(2)(5). AIMS: To analyze the epidemiological profile and quality of life (QoL) of patients with special needs and overload their caregivers. METHODS AND RESULTS: Health-related QoL was assessed in a quantitative, observational, cross-sectional study of prospective characteristics using the WHOQOL-BREF and ZARIT-22 questionnaires. This study included 122 patients were included; they were divided into patients without caregiver assistance (n = 63) who answered WHOQOL-BREF, 49 caregivers (n = 49) who responded to ZARIT-22, and 10 patients were secondarily caregivers of their parents and answered the ZARIT-22 + WHOQOL-BREF questionnaires. The WHOQOL-BREF general score was 71.94 ± 10.58, and patients born in urban areas and married had positive correlations (p < .05) with the QoL scores in the physical and social domains. ZARIT-22 scores showed an average of 58.63 ± 14.07. Data cross-checking revealed that patients of white races (p = .030) and who lived in urban regions (p = .003) generated less overload to caregivers. CONCLUSION: In the WHOQOL-BREF analysis, family income was a factor with direct impact, and all caregivers referred to moderate-to-high overload, with an increase in prevalence as far away from the service the patient resides. DOI: 10.1111/scd.12710 PMID: 35325480 [Indexed for MEDLINE]
- 56. Access to information on oral hygiene and mothers' practices of children with microcephaly caused by Zika virus.** Int J Dent Hyg. 2022 Nov;20(4):664-670. doi: 10.1111/idh.12618. Epub 2022 Sep 11. Vaz FFS(1), Sobrinho ARDS(2), Athayde FRRS(3), Carvalho MV(3)(4), Sette-de-Souza PH(2)(3)(4), Ferreira SJ(2)(3). OBJECTIVE: To verify whether access to information about oral hygiene influenced the practices of caregivers of children with microcephaly caused by Zika virus (ZIKV). METHODS: A case series study was developed at the Mens Sana Rehabilitation Center, in the municipality of Arcoverde, Pernambuco, Brazil. The study universe included the mothers of 32 children with microcephaly caused by Zika virus. Data collection took place in June 2018 and was carried out through a structured questionnaire. The variables studied comprised socioeconomic issues, habits, diet, and knowledge about oral hygiene. Fisher's Exact and Pearson's Chi-square tests were used with a significance level of 5%. RESULTS: Out of 32 individuals eligible to participate in the study, only 27 were selected. Most mothers reported receiving information about oral hygiene from their infants (63.0%). Fisher's Exact and Pearson's Chi-square tests showed that access to oral hygiene information was associated with mother's education, family income, regular visits to the dentist, frequency of tooth brushing, age at which the infant started brushing, and brushing time (p < 0.05). CONCLUSION: Access to information about oral hygiene positively influenced the oral health care of mothers with their children with microcephaly caused by ZIKV. DOI: 10.1111/idh.12618 PMID: 36048965 [Indexed for MEDLINE]
- 57. Oral Health Assessment Tool (OHAT) deputized to informal caregivers: Go or no go?** Clin Exp Dent Res. 2022 Feb;8(1):76-83. doi: 10.1002/cre2.481. Epub 2021 Aug 30. Ho BV(1), van de Rijjt LJM(1), Weijenberg RAF(1), van der Maarel-Wierink CD(2), Lobbezoo F(1). OBJECTIVE: Investigating the usability of the Dutch version of the Oral Health Assessment Tool (OHAT-NL) with

informal caregivers of community-dwelling older people with suspected dementia, without specific training. **MATERIALS AND METHODS:** In accordance with guidelines for establishing the cultural equivalency of instruments, the OHAT was translated into Dutch. Fifteen informal caregivers of community-dwelling older people with suspected dementia and, as a reference standard, a dentist assessed the oral health of the older people using the OHAT-NL. The caregivers' scores were compared with the dentist's scores. The usability of the OHAT-NL was rated on a 10-point scale (0 = incomprehensible, and 10 = very user friendly) and investigated further through short structured interviews. **RESULTS:** There were differences between the dentist's and caregivers' assessments of the individual categories of the OHAT-NL. The specificity of the need to visit an oral health care professional was 100.0%, while the sensitivity was 78.6%. The informal caregivers concluded that the tool made them more aware of different aspects of oral health. The tool was rated with a mean score of 7.7 (SD 1.7). **CONCLUSION:** The OHAT-NL could be a useful tool for informal caregivers without specific training to indicate whether the person they care for should visit an oral health care professional. DOI: 10.1002/cre2.481 PMID: PMC8874087 PMID: 34463048 [Indexed for MEDLINE]

- 58. Knowledge of caregivers of patients with special needs about oral health.** Spec Care Dentist. 2022 May;42(3):325-328. doi: 10.1111/scd.12678. Epub 2021 Nov 22. Bueno TC(1), Pereira JV(1)(2), Da Silva MMD(1), Elias RA(1), Lopes MA(1). DOI: 10.1111/scd.12678 PMID: 34811770 [Indexed for MEDLINE]
- 59. Association between the caregivers' oral health literacy and the oral health of children and youth with special health care needs.** PLoS One. 2022 Jan 27;17(1):e0263153. doi: 10.1371/journal.pone.0263153. eCollection 2022. Baskaradoss JK(1), AlSumait A(2), Behbehani E(1), Qudeimat MA(1). **AIM:** Previous studies have shown that children of caregivers with low oral health literacy (OHL) had more untreated caries than children of caregivers with adequate OHL. However, there is a paucity of information on this relationship among children and youth with special health care needs (CYSHCN). Accordingly, this study aims to assess the association between the caregivers' OHL and the oral health status of CYSHCN. **METHODS:** This cross-sectional study was conducted in four schools dedicated for CYSHCN. A 48-item questionnaire gathered information about the demographic and socioeconomic factors, the child/adolescent's medical condition, dental characteristics, caregiver self-efficacy and the child's dental attitude. The Comprehensive Measure of Oral Health Knowledge (CMOHK) questionnaire was used to assess the caregivers' OHL. The Löe & Silness gingival index (GI) and the Silness & Löe plaque index (PI) were used to assess gingival health and plaque levels, respectively. Directed acyclic graphs (DAGs) were utilized for the selection of the appropriate set of confounding variables for regression analysis. The mean score differences and 95% confidence intervals (CI) were estimated to quantify the associations of the various covariates with oral health outcome variables. **RESULTS:** This study included 214 child/caregiver dyads. Most participants were physically disabled (56.1%) followed by children with hearing difficulty (9.8%) and congenital anomalies/syndromes (7.9%). The mean PI and GI of the children was 1.26±0.52 and 1.30±0.47, respectively. The median CMOHK score was 12 and the respondents were dichotomized based on the median value. Low caregiver oral health conceptual knowledge was significantly associated with higher PI scores ( $\beta$  [95% CI] = -0.26 [-0.41, -0.13];  $p < 0.001$ ). Older participants (12-21-year-olds) had significantly higher plaque scores compared with younger participants (6-12-year-olds) ( $\beta$  [95% CI] = 0.33 [0.18, 0.51];  $p < 0.001$ ). Participants who brushed their teeth twice or more daily had significantly lower ( $\beta$  [95% CI] = -0.15 [-0.43, -0.01];  $p = 0.046$ ). Conceptual knowledge score was not significantly associated with GI. **CONCLUSION:** This study found lower caregiver OHL levels to be associated with higher plaque scores for their child. DOI: 10.1371/journal.pone.0263153 PMID: PMC8794213 PMID: 35085332 [Indexed for MEDLINE]
- 60. Parental psychosocial factors, unmet dental needs and preventive dental care in children and adolescents with special health care needs: A stress process model.** BMC Oral Health. 2022 Jul 11;22(1):282. doi: 10.1186/s12903-022-02314-y. Gazzaz AZ(1)(2), Carpiano RM(3), Laronde DM(4), Aleksejuniene J(5). **BACKGROUND:** Children and adolescents with special health care needs (SHCN) have higher unmet dental needs, but the potential mechanisms by which parental factors can influence dental care use have not been determined. Parenting a child with SHCN can present special demands that affect parents' well-being and, in turn, their caregiving. Hence, the study's overall aim was to apply the stress process model to examine the role of parental psychosocial factors in the association between child SHCN and dental care. Specifically, the study tested hypotheses regarding how (a) children's SHCN status is associated with child dental care (unmet dental needs and lack of preventive dental visits), both directly and indirectly via parental psychosocial factors (parenting stress, instrumental, and emotional social support) and (b) parental social support buffers the association between parenting stress and child dental care. **METHODS:** A secondary data analysis of the 2011-2012 US National Survey of Children's Health was performed for 6- to 11-year-old children ( $n = 27,874$ ) and 12- to 17-year-old adolescents ( $n = 31,328$ ). Our age-stratified models estimated associations between child SHCN status and parental psychosocial factors with two child dental care outcomes: parent-reported unmet child dental needs and lack of preventive dental care. **RESULTS:** Parents of children with (vs without) SHCN reported higher unmet child dental needs, higher parenting stress, and lower social support (instrumental and emotional). Instrumental, but not emotional, parental support was associated with lower odds of their child unmet dental needs in both age groups. The association between parenting stress and child dental care outcomes was modified by parental social support. **CONCLUSION:** Differences existed in child unmet dental needs based on SHCN status, even after adjusting for parental psychosocial factors. SHCN status was indirectly associated with

unmet dental needs via parental instrumental support among adolescents, and parental instrumental support buffered the negative association between parenting stress and both child dental care outcomes. Hence, parental social support was an important determinant of child dental care and partially explained the dental care disparities in adolescents with SHCN. DOI: 10.1186/s12903-022-02314-y PMID: 35818050 [Indexed for MEDLINE]

### **Developmental Conditions**

61. **A scoping review of oral health outcomes for people with cerebral palsy.** *Spec Care Dentist.* 2022 May;42(3):232-243. doi: 10.1111/scd.12671. Epub 2021 Oct 27. Lansdown K(1), Irving M(2), Mathieu Coulton K(1), Smithers-Sheedy H(3). INTRODUCTION: Good oral health is important for good overall health. Studies have reported poorer oral health outcomes for people with cerebral palsy, but there has been no synthesis of the evidence surrounding this and, there are no clear oral health recommendations for people with cerebral palsy globally. This review synthesizes the existing knowledge base on oral health in people with cerebral palsy and provides recommendations for future research. METHODS: A scoping review was conducted to assess the current literature. Databases were searched using relevant search terms. Study outcomes were synthesized according to their reported outcomes. RESULTS: One hundred seventy three studies were included in this review. Children with cerebral palsy have an increased risk for dental caries and untreated caries. Higher saliva osmolality is a major contributor to increased dental caries. People with cerebral palsy are more likely to experience tooth wear and bruxism. Children and their care-givers have poor oral health related quality of life. There is a large unmet need for oral healthcare in this group. There is no suggested plan for the prevention of poor oral health for this group. A high number of studies included related to research is conducted in low- and middle-income countries, care should be taken in applying results outside this context. There is a lack of research conducted in people with cerebral palsy, 18 years and over. CONCLUSION: There is a higher risk for poor oral health in people with cerebral palsy and there is a large unmet need to dental care in this group. This study highlights the need for further research to focus on adults with cerebral palsy and an of understanding the oral health care outcomes in the context of settings. The authors recommend the inclusion of classification systems and the integration of disability inclusive language in future studies. DOI: 10.1111/scd.12671 PMID: 34706111 [Indexed for MEDLINE]
62. **Oral health-related quality of life in children and adolescents with cerebral palsy: paired cross-sectional study.** *Eur Arch Paediatr Dent.* 2022 Jun;23(3):391-398. doi: 10.1007/s40368-022-00694-x. Epub 2022 Feb 6. de Castelo Branco Araújo T(1), Nogueira BR(2), Mendes RF(3)(2), Júnior RRP(3)(2). OBJECTIVES: To evaluate the impact of oral health conditions on the Oral Health-Related Quality of Life (OHRQoL) in children and adolescents with Cerebral Palsy (CP) and compare with children and adolescents without CP. METHODS: This was a paired cross-sectional study, consisting of 121 children and adolescents with CP and 121 without CP, aged 6 to 14 years. Caregivers filled a socioeconomic-demographic and the Parental-Caregiver Perceptions Questionnaire (P-CPQ). Physical examination of the oral cavity assessed the dental caries experience, need for treatment, consequences of untreated dental caries, presence of dental trauma, bruxism and malocclusion. A descriptive analysis and Kruskal-Wallis and Mann-Whitney tests ( $p < 0.05$ ) were performed. Variables with  $p$  values  $\leq 0.20$  in the bivariate analysis were included in the adjusted model analysis. Variables with a  $p$  value  $< 0.05$  remained in the final Poisson Regression model. RESULTS: Caries experience had a negative impact on the quality of life of both groups, with and without CP. Presence of gastroesophageal reflux and difficulty to opening the mouth also had a negative impact on the OHRQoL of the group with CP. CONCLUSION: Children and adolescents with CP suffered a greater negative impact on OHRQoL than individuals without CP. Difficulty in opening the mouth and the presence of GER had a negative effect on the quality of life of individuals with CP, while dental caries had a negative impact on the OHRQoL of children and adolescents of both groups. DOI: 10.1007/s40368-022-00694-x PMID: 35124753 [Indexed for MEDLINE]
63. **Risk Factors for Dental Caries Experience in Children and Adolescents with Cerebral Palsy-A Scoping Review.** *Int J Environ Res Public Health.* 2022 Jun 30;19(13):8024. doi: 10.3390/ijerph19138024. Cui S(1), Akhter R(1), Yao D(1), Peng XY(1), Feghali MA(1), Chen W(1), Blackburn E(1), Martin EF(1), Khandaker G(2). Cerebral palsy is a developmental motor disorder which has far-reaching impacts on oral health. This scoping review examined the extent of research undertaken regarding the risk factors affecting dental caries experience in children and adolescents with cerebral palsy. Data were obtained from the electronic databases Web of Science and PubMed, using 10 search strings, for studies published between 1983 and 2018. Eligible studies were required to have investigated caries in children under 18 with cerebral palsy, as well as be written in English. 30 papers published were identified for inclusion in the review. These included 23 cross-sectional, 6 case-control, and 1 longitudinal study. Studies were categorized into six domains of risk factors: socioeconomic status (SE); cerebral palsy subtype (CPS); demographics (D); condition of oral cavity (OC); dental habits (DH); nutrition and diet (ND). This review was conducted and reported in accordance with Preferred Reporting Items for Systematic reviews and Meta-Analyses Extension for Scoping Reviews (PRISMA-ScR) guidelines. The most significant risk factors were caregiver-related education levels, oral health literacy, and sugar intake; this underlines the important role of special education and dental awareness in reducing dental caries incidence in CP children.

Other factors showed divergent findings, highlighting the need for standardization and culturally specific studies in future literature. DOI: 10.3390/ijerph19138024 PMID: PMC9265822 PMID: 35805684 [Indexed for MEDLINE]

- 64. Orthodontic treatment of an adolescent with cerebral palsy - A case report.** Spec Care Dentist. 2022 Jul;42(4):421-431. doi: 10.1111/scd.12688. Epub 2021 Dec 16. Chhatwani S(1), Johannsen E(2), Möhlhenrich SC(1), Schulte AG(3), Danesh G(1), Schmidt P(3). Cerebral palsy is a common cause of chronic motor neuron impairment. A constant prevalence of 2 to 3/1000 births in industrialized countries has been described. This case report describes the treatment of a 9 year old boy presenting this form of motor neuron impairment and class II malocclusion with an overjet of 14 mm, hyperdivergent growth pattern and various habits. Orthodontic treatment consisted mainly of a two-phase treatment. The first phase was treated with removable appliances and followed by a phase with fixed appliances. Treatment duration with removable appliances was 4 years and 5 months and for the fixed appliance phase, 1 year and 7 months. A class I occlusion could be achieved in this case by removable and fixed orthodontic appliances combined with adjunctive treatment for the hypotonic orofacial musculature. DOI: 10.1111/scd.12688 PMID: 34914122 [Indexed for MEDLINE]
- 65. Evaluation of salivary parameters and Streptococcus' Mutans count in children with cerebral palsy in Egypt: a case control study.** BMC Oral Health. 2022 Sep 19;22(1):411. doi: 10.1186/s12903-022-02447-0. Qurimum SM(1), Ali AM(2), Raouf MM(3), Omar TEI(4), Dowidar KML(1). BACKGROUND: Children with cerebral palsy (CP) are at high risk for dental caries. Alteration of some salivary properties encountered among them compared to healthy children, could play a role in this elevated risk. OBJECTIVES: The aim of the present study was to assess salivary physicochemical properties; including total antioxidant (TAC), flow rate, viscosity, pH and buffering capacity, as well as Streptococcus mutans level among children with CP, also to correlate these variables to their caries experience. MATERIALS AND METHODS: This case control study included 80 children with CP, study group (SG) and matched number of healthy children for control group (CG). Interview-based questionnaire, clinical examination, salivary biochemical and microbiological investigations using MALDI-TOF were done. RESULTS: In SG, the caries experience in primary teeth dmft and S. mutans log value were significantly higher than CG (P = 0.039, P = 0.002) while unstimulated salivary flow rate, buffering capacity and salivary TAC were significantly lower (P < 0.0001). Multivariate linear regression showed that the presence of CP was significantly associated with the greatest variation in caries experience in the primary teeth and permanent teeth. Higher unstimulated salivary flow rate, or an increase in buffering capacity by 1 ml of acid/ml of saliva were associated with lower number of the affected primary and permanent teeth. On the other hand, One-unit increase in S. mutans log count and higher salivary TAC were associated with higher caries experience. CONCLUSION: Children with CP have higher caries experience (dmf) due to lower salivary protective factors and higher S. mutans counts. DOI: 10.1186/s12903-022-02447-0 PMID: PMC9487054 PMID: 36123671 [Indexed for MEDLINE]
- 66. Dietary Sugar Exposure and Oral Health Status in Children with Autism Spectrum Disorder: A Case-control Study.** J Autism Dev Disord. 2022 Jun;52(6):2523-2534. doi: 10.1007/s10803-021-05151-0. Epub 2021 Jul 4. Moorthy L(1), Dixit UB(2), Kole RC(1), Gajre MP(3). This case-control study compared dietary sugar exposure and oral health status between children with and without Autism Spectrum Disorder (ASD), aged 5-12 years (n = 136, each). Data regarding socio-demographics, child's oral hygiene practices and behavior, diet-related behavior, oral habits and dental trauma were obtained. Child's diet on the previous day was recorded using 24-h recall method and sugar exposure was calculated using Dental Diet Diary (D3) mobile application. Oral Hygiene Index-Simplified (OHI-S), deft and DMFT were recorded. Results showed no significant differences in sugar exposure, deft and DMFT between the groups. Although oral hygiene practices were significantly better in children with ASD, their OHI-S was significantly worse. Significantly more children with ASD reported mouth-breathing, bruxism and self-injurious habits. DOI: 10.1007/s10803-021-05151-0 PMID: 34218395 [Indexed for MEDLINE]
- 67. Parent Training for Dental Care in Underserved Children With Autism: A Randomized Controlled Trial.** Pediatrics. 2022 May 1;149(5):e2021050691. doi: 10.1542/peds.2021-050691. Fenning RM(1)(2), Butter EM(3), Macklin EA(4)(5), Norris M(3), Hammersmith KJ(6), McKinnon-Birmingham K(2), Chan J(4), Stephenson KG(3), Albright C(3), Scherr J(3), Moffitt JM(1)(2)(7), Lu F(4), Spaulding R(8), Guijon J(8)(9), Hess A(3), Coury DL(3), Kuhlthau KA(10), Steinberg-Epstein R(2). OBJECTIVE: Children with autism spectrum disorder (ASD) have difficulty participating in dental care and experience significant unmet dental needs. We examined the efficacy of parent training (PT) for improving oral hygiene and oral health in underserved children with ASD. METHOD: Families of Medicaid-eligible children with ASD (ages 3-13 years, 85% boys, 62% with intellectual disability) reporting difficulty with dental care participated in a 6-month randomized controlled trial comparing PT (n = 60) with a psychoeducational dental toolkit (n = 59). Primary outcomes were parent-reported frequency of twice-daily toothbrushing and dentist-rated visible plaque. Secondary outcomes included parent-reported child behavior problems during home oral hygiene and dentist-rated caries. Dentists were blind to intervention assignment. Analyses were intention to treat. RESULTS: Retention was high at posttreatment (3 months, 93%) and 6-month follow-up (90%). Compared with the toolkit intervention, PT was associated with increased twice-daily toothbrushing at 3 (78% vs 55%, respectively; P < .001) and 6 (78% vs 62%; P = .002) months and a reduction in plaque at 3 months (intervention effect, -0.19; 95% confidence interval [CI], -0.36 to -0.02; P = .03) and child problem behaviors at 3 (-0.90; 95% CI, -1.52 to -0.28; P = .005) and 6 (-0.77; 95% CI, -1.39 to -0.14; P = .02) months.

Comparatively fewer caries developed in children receiving the PT intervention over 3 months (ratio of rate ratios, 0.73; 95% CI, 0.54 to 0.99; P = .04). CONCLUSIONS: PT represents a promising approach for improving oral hygiene and oral health in underserved children with ASD at risk for dental problems. DOI: 10.1542/peds.2021-050691 PMID: 35211746 [Indexed for MEDLINE]

- 68. Development and application of a questionnaire to evaluate signs of temporomandibular disorder observed by caregivers of children with autism spectrum disorder.** Spec Care Dentist. 2023 Mar;43(2):232-237. doi: 10.1111/scd.12767. Epub 2022 Aug 14. Araújo Sarmiento J(1)(2), Valadas LAR(3), Sousa JADS(4), Gualberto AVS(5), Rodrigues LLFR(6), Guimarães AS(6). OBJECTIVE: This study aimed to develop and validate a questionnaire to detect signs of temporomandibular disorders (TMD), verifying whether the perception of signs observed by caregivers of non-verbal autistic children are the same as those observed by caregivers of verbal ones. METHODS: This is a cross-sectional, exploratory and analytical study. The sample consisted of forty individuals with Autism Spectrum Disorders (ASD), thirty non-verbal and ten verbal, besides their respective caregivers. For this, an experimental questionnaire was applied and compared to the European Academy of Orofacial Pain (EAOP) questionnaire, which is already validated and widely used throughout the world. All responses were compared using the chi-square test and the questionnaires were compared with the McNemar test, considering  $p < .05$ . RESULTS: When comparing the number of coincident responses to the questionnaire between caregivers and children, the mean was  $8.2 \pm 1.61$  responses. After performing the binomial test, no statistically significant discrepancy was found between the results of the two tests adopted when the questionnaires were compared (McNemar test,  $p > .05$ ) CONCLUSION: The development of this questionnaire and its validation serve as a support for health professionals in the TMD area, for the detection of TMD in non-verbal autistic children, providing them and their caregivers, who are faced with several difficulties in their day-by-day, a facilitating instrument. DOI: 10.1111/scd.12767 PMID: 35965388 [Indexed for MEDLINE]
- 69. Picture Examination Communication System Versus Video Modelling in Improving Oral Hygiene of Children with Autism Spectrum Disorder: A Prospective Randomized Clinical Trial.** Pediatr Dent. 2022 Jan 15;44(1):25-31. Shalabi MASA(1), Khattab NMA(2), Elheeny AAH(3). Purpose: The purpose of this study was to compare video modelling (VM) to a Picture Exchange Communication System (PECS) aimed at improving the oral hygiene of children with autism spectrum disorder (ASD). Methods: This prospectively stratified randomized controlled trial was conducted on 50 children with mild and moderate ASD. Children were assigned into two balanced groups. The control group was educated through PECS, and the intervention group was exposed to VM. Oral hygiene was assessed using the Oral Hygiene Index-simplified (OHI-s) on four occasions (at baseline and at three, six, and 12 months). Quantitative data were analyzed using Fisher's exact test and a t-test at a five percent significance level and 95 percent confidence interval (95% CI), respectively. Spearman's rank correlation coefficient (r) was used to correlate baseline characteristics in both groups to obtain average OHI-s scores. Results: The VM group showed a statistically significant reduction in average OHI-s scores compared to the PECS group over the follow-up period ( $P < 0.001$ ). At three, six, and 12 months, the OHI-s mean differences were 0.30 (95% CI equals 0.14 to 0.47), 0.58 (95% CI equals 0.39 to 0.77), and 0.57 (95% CI equals 0.30 to 0.84), respectively. For both groups, the severity of ASD was moderately associated with OHI-s scores at 12 months. Conclusion: Video modelling showed superior results in improving the oral hygiene of children with autism spectrum disorder compared to the Picture Exchange Communication System. PMID: 35232533 [Indexed for MEDLINE]
- 70. Developing a Toothbrushing Visual Pedagogy (TBVP) for Preschool Children with Autism Spectrum Disorder.** J Autism Dev Disord. 2022 Jan;52(1):327-338. doi: 10.1007/s10803-021-04946-5. Epub 2021 Mar 10. Du RY(1), Yang W(2), Lam PPY(3), Yiu CKY(3), McGrath CP(4). Visual pedagogy and social stories have been widely used to assist children with Autism Spectrum Disorder (ASD) in learning various skills. A toothbrushing visual pedagogy (TBVP) was developed adapting existing toothbrushing social stories for children with ASD. This TBVP consists of 13 toothbrushing steps with scripts describing the toothbrushing technique. To evaluate its feasibility, a review panel was formed to provide feedback on the TBVP and three other published toothbrushing social stories. Effectiveness of the TBVP was further evaluated among 119 preschool children with ASD with significant improvements in toothbrushing skills observed at 3-month and 6-month follow-ups. It is concluded that TBVP is a feasible and an effective educational means that assists children with ASD in learning toothbrushing skills. DOI: 10.1007/s10803-021-04946-5 PMID: 33689090 [Indexed for MEDLINE]
- 71. Factors influencing oral health behaviours, access and delivery of dental care for autistic children and adolescents: A mixed-methods systematic review.** Health Expect. 2022 Aug;25(4):1269-1318. doi: 10.1111/hex.13544. Epub 2022 Jun 18. Erwin J(1), Paisi M(1)(2)(3), Neill S(2), Burns L(1), Vassallo I(4), Nelder A(3), Facenfield J(3), Devalia U(5), Vassallo T(6)(7), Witton R(1)(3). BACKGROUND: Autistic children and young people (CYP) experience oral health (OH) inequalities. They are at high risk of dental disease and show significant levels of unmet need in relation to OH and access to dental care. AIM: This study aimed to gather evidence on the factors that influence OH behaviours, access to and delivery of dental care for autistic CYP. DESIGN: This was a mixed-methods narrative systematic review. DATA SOURCES: Embase, Web of Science, Dentistry & Oral Sciences Source, MEDLINE, Psycinfo, Scopus, CINAHL, SocINDEX and grey literature were the data sources for this study. REVIEW METHODS: A systematic search was conducted for qualitative, quantitative and mixed-methods research studies from countries with a High

Development Index that related to OH behaviours, access to and delivery of dental care for autistic CYP. Results were analysed using narrative synthesis. RESULTS: From 59 eligible studies, 9 themes were generated: (1) affordability and accessibility; (2) autism-related factors and cognitive or motor skill differences; (3) the dental environment; (4) managing CYP's behaviour; (5) responding and adapting to the needs of the autistic CYP and their parent/carer; (6) attitude of dental health professionals (DHPs) towards autistic CYP and their parents/carers; (7) knowledge of how to care for and support CYP's OH; (8) empowerment of parents/carers and collaboration with DHPs; and (9) communication and building rapport. CONCLUSION: The adoption of healthy OH behaviours and access to dental care by autistic CYP is impacted by a range of factors including those intrinsically related to a diagnosis of autism, for example, communication and those often associated with autism, for example, sensory sensitivities. Access to better OH and dental care can be facilitated by responding to the individual needs of autistic CYP through accommodation, education and adaptation. This necessitates greater awareness and knowledge of autism amongst DHPs and the provision of appropriate services. More methodologically robust intervention studies are needed to identify effective ways to support autistic CYP in achieving good OH and access to dental care. PATIENT AND PUBLIC CONTRIBUTION: The review protocol was developed with members of the project patient and public involvement group who provided the autistic voice, contributing to the interpretation of the review findings and writing of the manuscript. DOI: 10.1111/hex.13544 PMID: PMC9327820 PMID: 35716111 [Indexed for MEDLINE]

- 72. Dental care experiences and clinical phenotypes in children on the autism spectrum.** Spec Care Dentist. 2023 Jan;43(1):17-28. doi: 10.1111/scd.12746. Epub 2022 Jun 2. Alvares GA(1)(2), Mekertichian K(3), Rose F(1)(2), Vidler S(2), Whitehouse AJO(1)(2). AIMS: Children diagnosed with autism spectrum disorder may be at higher likelihood of experiencing poorer oral health and difficulties accessing dental health care. However, identifying which children on the autism spectrum may be more vulnerable to experiencing dental care difficulties is still unknown. This study investigated parental reports of oral health and dental service needs of children diagnosed with autism and explored relationships with clinical phenotypes. METHODS AND RESULTS: Participants (n = 140) were parents of children on the autism spectrum who had participated in a large national biobank study, the Australian Autism Biobank, invited to complete additional surveys about oral health, service use, and barriers to care. One third of parents reported their child's oral health was worse than other children the same age, with 26% reporting untreated dental problems. A third of children were reported to have undergone general anaesthesia at least once for dental procedures. Children who had undergone general anaesthesia were more likely to have intellectual disability and greater functional difficulties. Parents of children with greater functional limitations and sensory challenges reported experiencing barriers to accessing dental care more frequently. CONCLUSION: These results have important implications for paediatric dentists working with children diagnosed with autism with co-occurring intellectual, functional, and sensory challenges. Findings may inform the development of more personalised autism-specific supports. DOI: 10.1111/scd.12746 PMID: 35654391 [Indexed for MEDLINE]
- 73. Are adults with autism receiving regular preventive dental services?** Spec Care Dentist. 2023 Jan;43(1):3-8. doi: 10.1111/scd.12738. Epub 2022 May 30. McNeil R(1), Bray KK(2), Mitchell TV(1), Pendleton C(1), Marchini L(1). PURPOSE/AIM: To investigate the frequency of preventive dental care among adults with autism and explore factors associated with receiving regular preventive care. MATERIALS AND METHODS: De-identified data was collected from electronic health records of 18-year-old or older patients with autism that had at least one preventive dental procedure recorded. The data was then analyzed to describe the frequency of preventive dental procedures provided for this population and investigate what variables are associated with regular care. RESULTS: Sample size was 119, 67% were males, average age was 30.8 years, and 58% had Medicaid. Average BMI was 42.8, the prevalence of diabetes and heart disease were 16% and 34%, respectively, and 86% reported mental health problems. Recreational drug use was 6.8%, alcohol use was 19%, and tobacco use 16%. Xerostomia was reported by 32%, and the average number of medications was  $7.2 \pm 5.5$ . The average number of preventive dental visits was  $7.9 \pm 10.6$ , and 35% of the patients had at least one preventive dental visit per year. Only number of medications had a statistically significant association with number of preventive dental visits. CONCLUSIONS: Only one in every three adults with autism had at least one preventive dental visit per year. DOI: 10.1111/scd.12738 PMID: PMC10084249 PMID: 35636432 [Indexed for MEDLINE]
- 74. Autism spectrum disorder and paediatric dentistry: A narrative overview of intervention strategy and introduction of an innovative technological intervention method.** Eur J Paediatr Dent. 2022 Mar;23(1):54-60. doi: 10.23804/ejpd.2022.23.01.10. Pagano S(1), Lombardo G(1), Coniglio M(1), Donnari S(2), Canonico V(2), Antonini C(1), Lomurno G(3), Cianetti S(1). AIM: When treating patients with Autism Spectrum Disorder (ASD) the doctor-patient relationship can be very challenging. The dentist is often forced to work under general anaesthesia or conscious sedation. Children with ASD are patients with an increased risk of caries due to poor oral hygiene, a cariogenic diet and the use of xerostomal drugs. In this work therapeutic strategies used to treat this kind of patients are evaluated and a new method to treat children with ASD is presented in order to increase awareness about this condition in the dental field. METHODS: The Atlas Center (a non-profit organisation in Peurgia, Italy) has developed a software, called paINInteraction, that allows these special children to immerse themselves in a virtual reality with the help of an operator. Through this system the child can explore the dental office (and all its sounds and noises) before the real

dental visit, thus connecting to the dental professional, achieving greater compliance and reducing anxiety. CONCLUSION: patient interaction, with the use of digital technology tools, may be particularly well suited to introduce patients to the therapeutic environment, particularly in the dental setting. DOI: 10.23804/ejpd.2022.23.01.10 PMID: 35274543 [Indexed for MEDLINE]

- 75. Malocclusion complexity and orthodontic treatment need in children with autism spectrum disorder.** Clin Oral Investig. 2022 Oct;26(10):6265-6273. doi: 10.1007/s00784-022-04578-8. Epub 2022 Jun 15. Meuffels SA(1), Kuijpers-Jagtman AM(2)(3)(4), Tjoa STH(5), Bonifacio CC(1), Carvajal Monroy PL(6). OBJECTIVES: This study aimed to investigate the malocclusion complexity and orthodontic treatment need among children with and without autism spectrum disorder (ASD) referred for orthodontic treatment by quantifying the Discrepancy Index (DI) and Index of Orthodontic Treatment Need (IOTN). MATERIALS AND METHODS: Dental records of 48 ASD and 49 non-ASD consecutive patients aged between 9 and 18 years (median age 13.0 years) referred for orthodontic treatment were reviewed and compared. The Discrepancy Index (DI) was quantified to determine the malocclusion complexity, and the Index of Orthodontic Treatment Need (IOTN), including the Dental Health Component (IOTN-DHC) and Aesthetic Component (IOTN-AC), was quantified to determine the orthodontic treatment need. Statistical analysis included descriptive analysis, Pearson chi-square tests, Fisher's exact test, Mann-Whitney U tests, and several univariate and multivariate regression analyses. The statistical analysis used descriptive analysis, Pearson chi-square test, Fisher's exact test, and multivariate logistic regression. RESULTS: The results show that both malocclusion complexity (DI,  $p = 0.0010$ ) and orthodontic treatment need (IOTN-DHC,  $p = 0.0025$ ; IOTN-AC  $p = 0.0009$ ) were significantly higher in children with ASD. Furthermore, children with ASD had a higher prevalence of increased overjet ( $p = .0016$ ) and overbite ( $p = .031$ ). CONCLUSIONS: Malocclusion complexity and orthodontic treatment need are statistically significantly higher among children with ASD than children without ASD, independent of age and sex. CLINICAL RELEVANCE: Children with autism may benefit from visits to a dental specialist (orthodontist) to prevent, to some extent, developing malocclusions from an early age. DOI: 10.1007/s00784-022-04578-8 PMCID: PMC9525343 PMID: 35701552 [Indexed for MEDLINE]
- 76. Occupational and speech therapists' perceptions of their role in dental care for children with autism spectrum disorder: A qualitative exploration.** Int J Paediatr Dent. 2022 Nov;32(6):865-876. doi: 10.1111/ipd.13009. Epub 2022 May 27. Junnarkar VS(1)(2), Tong HJ(2), Hanna KMB(3), Aishworiya R(4), Duggal M(2)(5). BACKGROUND: Children with autism spectrum disorder (ASD) have challenges in home oral care, accessing a dentist and accepting dental treatment. Occupational therapists (OTs) and speech therapists (STs) are likely to be involved earlier in managing communication, behavioural and sensory processing issues. AIM: To determine perceived issues, barriers and potential solutions to dental care for children with ASD in Singapore from the perspective of OTs and STs. DESIGN: Semi-structured interviews and a focus group discussion involving OTs and STs who treat children with ASD were conducted. Audio recordings were transcribed and coded into themes using the NVivo 12 software. RESULTS: Emergent themes indicated that: (i) OTs and STs have important roles in recognition of issues with toothbrushing, oral pathology and harmful oral habits; (ii) OTs and STs were able to identify reasons for difficulties in oral home care for children with ASD and offer helpful strategies; and (iii) OTs and STs can play a role in pre-dental visit preparations but lack a clear dental referral pathway. CONCLUSIONS: OTs and STs exclusively assist in the early identification and referrals of children with ASD to the dentist. Interprofessional collaboration with dentists should be further explored to aid in the provision of preventive dental advice. DOI: 10.1111/ipd.13009 PMID: 35561086 [Indexed for MEDLINE]
- 77. Qualitative study on barriers and coping strategies for dental care in autistic children: Parents' perspective..** Int J Paediatr Dent. 2023 Mar;33(2):203-215. doi: 10.1111/ipd.13035. Epub 2022 Nov 22. Junnarkar VS(1)(2), Tong HJ(2)(3), Hanna KMB(4), Aishworiya R(5), Duggal M(2)(6). BACKGROUND: Children with autism spectrum disorders (ASD) face challenges in home oral care, accessing a dentist and accepting dental treatment. AIM: To determine the barriers to dental care for autistic children in Singapore through the experiences and opinions of their parents. DESIGN: A qualitative exploratory approach comprising semistructured interviews and a focus group discussion was used. Audio recordings were transcribed and coded into themes using NVivo 12 software. RESULTS: Participants were 23 parents of autistic children aged 3-12 years. The following barriers were identified: (1) Sensory, physical and parental knowledge issues are related to toothbrushing difficulties and use of nonoptimally fluoridated toothpaste in autistic children. (2) Accessing dental services was hindered by a lack of parental knowledge on the importance of an early dental home, parental apprehension about the child's acceptance of dental care, lack of information on specialised dentists and perceived high cost of dental visits. Parental suggestions for improvements included understanding the child's sensory profile, more information on finding a suitable dentist and subsidisation of costs for multiple acclimatisation visits. CONCLUSION: Caregivers' education, information about specialised dentists and the availability of specific dental care resources for autistic children in Singapore are needed for optimising their dental care. DOI: 10.1111/ipd.13035 PMID: 36271894 [Indexed for MEDLINE]
- 78. Malocclusion characteristics amongst individuals with autism spectrum disorder: a systematic review and meta-analysis..** BMC Oral Health. 2022 Aug 10;22(1):341. doi: 10.1186/s12903-022-02366-0. da Motta TP(1), Owens J(2), Abreu LG(3), Debossan SAT(1), Vargas-Ferreira F(1), Vettore MV(4). BACKGROUND: To estimate the prevalence of malocclusion in individuals with autism spectrum disorders (ASD) and to assess the relationship between ASD and malocclusion. METHODS: We searched

electronic databases including PubMed, Scopus, Web of Science, Cochrane, Embase, SciELO LILACS, Proquest, OpenGrey and Google Scholar. There were no language or publication dates restrictions. Two researchers independently performed selection, data extraction and quality assessment. Quality assessment and risk of bias were evaluated through the Newcastle-Ottawa scale and ROBINS-E tool. Meta-analyses using random effect models were used to estimate pooled measures of prevalence of malocclusion characteristics in individuals with ASD and pooled odds ratio (OR) on the relationship between ASD and malocclusion characteristics. Subgroup meta-analyses were conducted according to children and adolescents, history of orthodontic treatment, and occurrence of other syndromes and medical conditions. RESULTS: Searching identified 5549 papers with 238 were selected for full assessment. Eighteen cross-sectional studies were included according to inclusion criteria. Of them, eleven studies were considered of moderate quality. A judgement of critical risk of bias occurred for thirteen studies. The most prevalent malocclusion characteristics in individuals with ASD were crowding (33%; 95% CI 22 to 44%) and increased maxillary overjet (39%; 95% CI 23 to 54%). Individuals with ASD had higher odds of Angle's Class II (OR 1.92; 95% CI 1.36 to 2.72), Angle's Class III (OR 2.33; 95% CI 1.29 to 4.23), open bite (OR 1.96; 95% CI 1.21 to 3.16), and increased maxillary overjet (OR 1.53; 95% CI 1.06 to 2.21) than individuals without ASD. CONCLUSIONS: Angle's Class II, Angle's Class III, anterior open bite and increased maxillary overjet were more prevalent in individuals with ASD than those without ASD. Further high-quality studies are needed. DOI: 10.1186/s12903-022-02366-0 PMCID: PMC9367144 PMID: 35948958 [Indexed for MEDLINE]

- 79. Is examining children and adolescents with autism spectrum disorders a challenge?-Measurement of Stress Appraisal (SAM) in German dentists with key expertise in paediatric dentistry.** PLoS One. 2022 Aug 3;17(8):e0271406. doi: 10.1371/journal.pone.0271406. eCollection 2022. Reis D(1)(2), Fricke O(1)(2), Schulte AG(3), Schmidt P(1)(2)(3). OBJECTIVES: This questionnaire-based validation study investigated if the dental examination of children and adolescents with autism spectrum disorder is viewed by dentists with key expertise in paediatric dentistry as a challenge or a threat in terms of transactional stress theory. The Stress Appraisal Measure (SAM) was used for this purpose and its feasibility and validity was examined as a first part of a multi-stage process for validation in dentistry with a sample of German dentists. It has hardly been investigated how the treatment of children and adolescents with a disorder from the autism spectrum is perceived by dentists. METHODS: An online-based survey (39 questions) plus the SAM as an add-on as well as a preceding short story of imagination on the topic (appointment for a dental check-up in a special school) were developed. Via e-mail members of the German Society of Paediatric Dentistry (DGKiZ) received a link which enabled interested members to participate. The majority of the members of the DGKiZ have additional qualifications in the treatment of children and adolescents and further training in the area of special needs care in dentistry. The data analysis was based on the SAM and its subscales. RESULTS: Out of the 1.725 members of DGKiZ 92 participants (11 male, 81 female) fully completed the questionnaire and the SAM. All in all the dentists rated their own psychological and physical stress in course of treating children and adolescents with a disorder from the autism spectrum between less and partly stressful. Although the structure of the SAM could not be fully mapped by means of a factor analysis, the different ratings "challenge" or "threat" could be comprehensibly evaluated after reading the story. The participants rated the situation from the story in general as challenging but not as threatening. Intercorrelations between the subscales of the SAM (e.g threat and centrality) of  $r = .56$  showed that the scales are not clearly independent of one another. According to the transactional stress model, the SAM bases on, stress (perceived stressfulness) arises from appraisal processes (e.g. threat, controllable-by-self) that bring about a comparison between the requirements for the described situation and one's own possibilities in terms of a person-environment-fit. In the hierarchical regression a variance of  $R^2 = .48$  could be explained with all six subscales (appraisal processes) to predict perceived stressfulness of the SAM within a sample of dentists. CONCLUSIONS: Due to the response rate the results of the SAM are not representative for all German dentists, but it offers an insight into topics of special needs dentistry in Germany that have not yet been examined. Overall, the feasibility and validity of the SAM in the context of mapping cognitive appraisal processes and stress could be confirmed. Taking into account the result that the treatment of children and adolescents with autism spectrum disorder is seen as a challenge, it is concluded that there is a need to improve the education of dental students and graduated dentists in Germany in the field of special needs dentistry. DOI: 10.1371/journal.pone.0271406 PMCID: PMC9348685 PMID: 35921352 [Indexed for MEDLINE]
- 80. Responsiveness of the B-ECOHIS to detect changes in OHRQoL following dental treatment of children with autism spectrum disorder.** Braz Oral Res. 2022 Jun 10;36:e079. doi: 10.1590/1807-3107bor-2022.vol36.0079. eCollection 2022. Paula VAC(1), Faker K(1), Bendo CB(2), Tostes MA(1). The Brazilian Early Childhood Oral Health Impact Scale (B-ECOHIS) is an oral health-related quality of life (OHRQoL) questionnaire. This paper aims to investigate the responsiveness of the B-ECOHIS to dental treatment in individuals diagnosed with autism spectrum disorder (ASD) and determine if dental treatment has an impact on OHRQoL. The survey targeted 27 ASD individuals aged 4 to 14 years attending the Acolher Project of the University Federal Fluminense. This project provides children and adolescents with disabilities with oral health services. A group of randomly selected caregivers self-completed the B-ECOHIS before and 14 days after their children's dental treatment. The dental treatment included meticulous screening, preventive treatment, and restorative treatment. Responsiveness was assessed by investigating the effect size (ES) and standardized response mean (SRM). Wilcoxon test was used to evaluate internal

responsiveness (distribution-based approach). The B-ECOHIS showed significant changes in the total score ( $p < 0.001$ ) and in all domains. The ES of the total B-ECOHIS after treatment was 1.28 and ranged between 0.70 and 1.14 for the domains. The SRM for each of the domains was large, except for the symptom domain. The B-ECOHIS is sensitive and responsive to ASD individuals undergoing dental treatment. Individuals with ASD showed improvement in their OHRQoL score after dental treatment. DOI: 10.1590/1807-3107bor-2022.vol36.0079 PMID: 35703705 [Indexed for MEDLINE]

- 81. Parents' Perceptions Regarding the Effectiveness of Dental Desensitization for Children with Autism Spectrum Disorder.** *Pediatr Dent.* 2022 May 15;44(3):192-197. Cai J(1), Habib D(2), Bedos C(3), Santos BFD(4). Purpose: Desensitization is a behavior guidance technique that has been used to help improve behavior and capacity to receive dental care in patients with autism spectrum disorder (ASD). The purpose of this study was to elicit parents' perspectives regarding the effectiveness, benefits, and barriers associated with desensitization. Methods: A qualitative descriptive approach was used. Participants included parents of children with ASD who received regular dental care in a pediatric hospital. Data were collected through individual in-depth semi-structured interviews. All interviews were audio-recorded to be transcribed verbatim and analyzed using a thematic approach. Results: Thirteen parents were interviewed. The findings indicate that desensitization improved children's dental care experience, as the repetition of appointments allowed them to develop familiarity in the clinical setting, reduced their stress and anxiety, and consequently treatment acceptance. However, parents described certain barriers to desensitization, including the organization and burden of frequent appointments and structural and financial issues, as the cost associated with desensitization visits was not covered by Medicare/Medicaid. Conclusion: Desensitization is seen by parents as an important avenue for improving dental encounters for children with autism spectrum disorder. PMID: 35799335 [Indexed for MEDLINE]
- 82. Caries and Oral Health Behaviors Among Children With and Without Intellectual and Developmental Disabilities.** *JAMA Pediatr.* 2022 Jul 1;176(7):722-724. doi: 10.1001/jamapediatrics.2022.0512. Bui S(1), Meyer BD(2). This study evaluates oral health behaviors and caries in children with and without intellectual and developmental disabilities. DOI: 10.1001/jamapediatrics.2022.0512 PMID: 35435930 [Indexed for MEDLINE]
- 83. OPERATIONALIZING ORAL HEALTH OUTCOME MEASURES TO IMPROVE THE ORAL HEALTH OF PERSONS WITH INTELLECTUAL DISABILITIES.** *J Evid Based Dent Pract.* 2023 Jan;23(1S):101790. doi: 10.1016/j.jebdp.2022.101790. Epub 2022 Oct 17. Nair R(1), Pattamatta M(2), Listl S(2). Individuals with intellectual disability (ID) face significant challenges in preventing oral diseases. They also lack access to high-quality oral health care in professional settings. To understand the effects of oral conditions on their lives and health, it is necessary to assess their oral health outcome measures. For those with mild ID, who possess adequate linguistic and cognitive abilities, accessibility features should be incorporated in the dental patient reported outcome (dPRO) measures. But many other individuals often lack the linguistic and cognitive ability to self-report through dPRO measures. While self-reported measures are preferable, requiring dPROs in this population would result in a high amount of missing data and the inability to assess interventions for improving their dental health. Thus, there is a need to use proxy-reported outcome (ProxRO) measures, observer reported outcome (ObsRO) measures, and clinician reported outcome (ClinRO) measures among those with ID. This is also a common approach taken by other specialties that work closely with those with ID, where the measures for activities of daily living and adaptive behavior measures use reporting by caregivers. ProxRO measures in dentistry that were created for infants and young children provide a structure for appropriate adaptations and the creation of relevant outcome measures. Including input from the intensely multidisciplinary teams that provide supports for those with ID is key to creating high-quality measures and oral health interventions for those with ID. DOI: 10.1016/j.jebdp.2022.101790 PMID: 36707168 [Indexed for MEDLINE]
- 84. Overcoming barriers to dental care for adults with intellectual and developmental disabilities.** *Quintessence Int.* 2022 May 11;53(6):469-470. doi: 10.3290/j.qi.b3015157. Kapral E. DOI: 10.3290/j.qi.b3015157 PMID: 35543669 [Indexed for MEDLINE]
- 85. Preliminary Results of an Interdisciplinary Behavioral Program to Improve Access to Preventative Dental Care for Adults With Intellectual and Developmental Disabilities.** *Intellect Dev Disabil.* 2022 Dec 1;60(6):504-519. doi: 10.1352/1934-9556-60.6.504. Berens JC(1), Tsami L(2), Lerman DC(2), Matteucci M(2), Fray DF(3), Warner BF(3), Keehan LA(4), Staggars KA(4), Peacock C(4). Adults with intellectual and developmental disabilities (AIDD) experience significant oral health disparities, partially due to perceived behavioral issues. This article describes the preliminary outcomes of a developing interdisciplinary (dental, medical, behavioral) program involving a behavioral intervention for AIDD previously receiving preventative dental care with sedation, general anesthesia, or protective stabilization (SAS). After a baseline assessment, a board-certified behavior analyst implemented increasingly complex behavioral interventions during simulated dental visits. Prior to COVID-19 pandemic-related restrictions, there were 32 active participants; 15 (46.9%) successfully completed a focused, real dental exam with simple behavioral interventions and 17 (53.1%) remain in treatment. These preliminary results suggest that many AIDD previously receiving SAS may participate in a preventative dental exam with minimal behavioral supports, if given the opportunity. DOI: 10.1352/1934-9556-60.6.504 PMID: 36454615 [Indexed for MEDLINE]
- 86. The 100 most-cited papers in dentistry for individuals with neurodevelopmental disorders: Bibliometric profile of scientific research.** *Spec Care Dentist.* 2022 Jul;42(4):369-375. doi: 10.1111/scd.12684. Epub 2021 Dec 1. Kammer PV(1), Moro JS(1),

Martins-Júnior PA(2), Cardoso M(1), Bolan M(1), Santana CM(1). AIM: To conduct a bibliometric analysis of the top 100 most-cited papers in dentistry for individuals with neurodevelopmental disorders. METHODS AND RESULTS: A search strategy was constructed and conducted at the Web of Science in the category of "Dentistry, Oral Surgery, and Medicine". The following information was extracted from each paper: title, authorship, year of publication, title of the journal, study subject, study design, age range of sample participants, type of disability, institution, country and continent, number of citations and citation density. Google Scholar and Scopus were used to crosscheck the number of citations of the most-cited papers. The VOSviewer software was used to generate bibliometric network maps. The papers received 4453 citations in Web of Science, ranging from 30 to 106 citations. Most papers were published by the USA (35%), had an observational design (78%) and the main subject was epidemiology (31%). Most studies focused on individuals with Down syndrome (34%) and Autism Spectrum Disorder (18%) and were published in the Journal of Periodontology (10%) and the Pediatric Dentistry Journal (7%). CONCLUSION: Most of the studies included in this review were characterized as epidemiological studies. Future research should focus on behavior guidance, dental education, and access to dental services. DOI: 10.1111/scd.12684 PMID: 34856008 [Indexed for MEDLINE]

**87. Association between craniofacial anomalies, intellectual disability and autism spectrum disorder: Western Australian population-based study.** *Pediatr Res.* 2022 Dec;92(6):1795-1804. doi: 10.1038/s41390-022-02024-9. Epub 2022 Mar 29. Junaid M(1)(2), Slack-Smith L(3)(4), Wong K(4), Bourke J(4), Baynam G(4)(5), Calache H(6)(7), Leonard H(4). BACKGROUND: Accurate knowledge of the relationship between craniofacial anomalies (CFA), intellectual disability (ID) and autism spectrum disorder (ASD) is essential to improve services and outcomes. The aim is to describe the association between CFA, ID and ASD using linked population data. METHODS: All births (1983-2005; n = 566,225) including CFA births (comprising orofacial clefts, craniosynostosis, craniofacial microsomia and mandibulofacial dysostosis) surviving to 5 years were identified from the birth, death, birth defects and midwives population data sets. Linked data from these data sets were followed for a minimum of 5 years from birth until 2010 in the intellectual disability database to identify ID and ASD. These associations were examined using a modified Poisson regression. RESULTS: Prevalence of ID and ASD was higher among CFA (especially with additional anomalies) than those without [prevalence ratio 5.27, 95% CI 4.44, 6.25]. It was higher among CFA than those with other gastrointestinal and urogenital anomalies but lower than nervous system and chromosomal anomalies. Children with CFA and severe ID had a higher proportion of nervous system anomalies. CONCLUSIONS: Findings indicate increased ID and ASD among CFA but lower than nervous system and chromosomal anomalies. This population evidence can improve early identification of ID/ASD among CFA and support service planning. IMPACT: Our study found about one in ten children born with craniofacial anomalies (CFA) are later identified with intellectual disability (ID). Prevalence of ID among CFA was higher than those with other gastrointestinal, urogenital, and musculoskeletal birth defects but lower than those with the nervous system and chromosomal abnormalities. Most children with craniofacial anomalies have a mild-to-moderate intellectual disability with an unknown aetiology. On average, intellectual disability is identified 2 years later for children born with non-syndromic craniofacial anomalies than those with syndromic conditions. Our findings can improve the early identification of ID/ASD among CFA and support service planning. DOI: 10.1038/s41390-022-02024-9 PMCID: PMC9771801 PMID: 35352007 [Indexed for MEDLINE]

**88. Barriers and facilitators in the orthodontic treatment of teenagers with neurodevelopmental disabilities.** *Am J Orthod Dentofacial Orthop.* 2022 Jan;161(1):115-124. doi: 10.1016/j.ajodo.2020.06.054. Epub 2021 Sep 23. Véliz Méndez S(1), Rotman M(2), Hormazábal F(3), Sepúlveda L(4), Valle M(4), Álvarez E(3). INTRODUCTION: Patients with neurodevelopmental disabilities often experience barriers to dental care. Despite greater access to orthodontic treatment, information about the perceptions of patients with neurodevelopmental disabilities regarding orthodontic care remains scarce. The objective of this research was to investigate perceptions of patients, caretakers, and orthodontic residents regarding the barriers to and facilitators of orthodontic care for patients with neurodevelopmental disabilities. METHODS: A qualitative study was conducted through semistructured interviews of 26 subjects: 10 patients with neurodevelopmental disabilities (4 with cognitive disabilities, 4 with autism spectrum disorder, and 2 with communication disorder), 8 caretakers, and 8 orthodontic residents. The responses were analyzed qualitatively by content analysis. RESULTS: Four dimensions of analysis were identified: previous experience, barriers to care, facilitators of care, and perception of care. There are different orthodontic care barriers and facilitators perceived by patients, caretakers, and residents treating patients with neurodevelopmental disabilities. Factors such as the reason for consultation, previous experience or exposure to orthodontic care or attention, and personal motivation of those involved were used to model the care of these patients. CONCLUSIONS: There are barriers and facilitators in orthodontic care for patients with neurodevelopmental disabilities, caretakers, and orthodontic residents. Educational programs in orthodontics must work to improve access and care for patients and educational training programs for students and clinical faculty. DOI: 10.1016/j.ajodo.2020.06.054 PMID: 34563424 [Indexed for MEDLINE]

**89. Coping strategies of caregivers in performing oral hygiene care in adults with special needs: A qualitative study.** *Spec Care Dentist.* 2022 Nov;42(6):616-622. doi: 10.1111/scd.12721. Epub 2022 Apr 1. Leme PAT(1), Nishiyama RR(1), Santos LC(1), Mialhe FL(1). Basic and daily oral hygiene care is essential for maintaining oral health in adults with special needs. The caregivers act in

this process and need to be understood about the difficulties and the resources they use to deal with this demand. The aim of this qualitative study was to understand the difficulties and strategies of caregivers regarding oral hygiene for adults with special health care needs (SHCN) METHODS: Twenty-one caregivers of adults with SHCN participated in an interview in which the following questions were asked: What are the greatest difficulties in performing oral hygiene for the adult with SHCN you take care of? and "How do you overcome these difficulties?" The interviews were recorded and the qualitative data were analyzed using the Discourse of the Collective Subject technique RESULTS: All respondents were female with a mean age of 58.5 years ( $\pm$  10.8) and the adults with SHCN presented mean age of 30 years ( $\pm$  18). The greatest difficulty pointed out by caregivers regarding oral hygiene for adults with SHCN was their non-cooperation to do such activity. Regarding coping strategies, caregivers pointed out several strategies to perform oral hygiene in adults with SHCN, such as supervising their brushing, seek for a qualified dentist to assist with this task, performing oral hygiene during the bath, performing physical restraint, among others CONCLUSION: The caregivers' perspectives indicate feelings of failure, discomfort, but also the use of creative resources to deal with the task. The results bring up themes that refer to anxieties and are related to technical and dental issues, that could be explored and need to be recognized by the reference oral healthcare team, whose responsibility it is also to work for the empowerment of caregivers. DOI: 10.1111/scd.12721 PMID: 35363901 [Indexed for MEDLINE]

- 90. Changes in Use and Access to Care for Children and Youth With Special Health Care Needs During the COVID-19 Pandemic..** J Pediatr Health Care. 2023 Mar-Apr;37(2):185-192. doi: 10.1016/j.pedhc.2022.09.008. Epub 2022 Sep 21. Gigli KH(1), Graaf G(2). INTRODUCTION: Children and youth with special health care needs (CYSHCN) are vulnerable to health care disruption, and policies were adopted to mitigate COVID-19-related disruptions. We compare CYSHCN use of and access to care in 2019 to 2020. METHOD: Using the National Survey of Children's Health, we identified CYSHCN and assessed differences in health care use, unmet health care needs, frustrations accessing care, and barriers to care using multivariable logistic regression analysis. RESULTS: The final sample included 17,065 CYSHCN. In the fully adjusted analysis, there was a significant decrease in odds of accessing preventive dental care (adjusted odds ratio [AOR], 0.63; 95%confidence interval [CI], 0.51-0.77) and increased odds of unmet mental health care needs (AOR,1.34; 95% CI, 1.02-1.77). The inability to obtain an appointment was a barrier that increased during the study period (AOR, 2.77; 95% CI, 1.71-4.46). DISCUSSION: Novel pandemic related policies may have mitigated negative impacts on health care access for CYSHCN. DOI: 10.1016/j.pedhc.2022.09.008 PMID: 36216644 [Indexed for MEDLINE]
- 91. Is Teledentistry a Feasible Alternative for People Who Need Special Care?** Disaster Med Public Health Prep. 2022 Apr 11;17:e129. doi: 10.1017/dmp.2022.38. Omezli MM(1), Torul D(1), Yilmaz EB(1). OBJECTIVE: The aim of this study is to explore the feasibility and acceptability of teledentistry as a vehicle that provides enhanced delivery of oral care for the people who need special care (PNSC). METHODS: Between January 2018 and September 2020, PNSC who were admitted in the study were either waiting for a follow-up (F) appointment or on a waiting list. An examination via video call was carried out for initial examination (IE) and F purposes. The virtual examination was scored by the clinician who performed the examinations. The experience of the participants was evaluated with a satisfaction questionnaire. RESULTS: Forty PNSC (26 females, 14 males) between ages 7 and 48 years ( $21.17 \pm 10.62$ ) participated in the study. According to the clinician ratings, the accuracy of the examination was rated as the lowest. The F group had higher scores when compared to the IE group regarding clinician rating. No significant differences were found in terms of the scoring of the clinician and patient/parent satisfaction regarding cooperation status and type of examination ( $P \geq 0.05$ ). CONCLUSIONS: Through adequate adaptation of the technology into clinical practice and overcoming the barriers for wider implementation, the teledentistry approach could be a reliable and feasible alternative in triaging, treatment planning, and F purposes for PNSC. DOI: 10.1017/dmp.2022.38 PMID: 35403598 [Indexed for MEDLINE]
- 92. Positive Parenting Styles Tied to Less Unmet Dental Needs in Children with Developmental Disabilities..** J Autism Dev Disord. 2022 Dec;52(12):5395-5402. doi: 10.1007/s10803-021-05351-8. Epub 2022 Jan 17. Polprapreut Y(1)(2), Kerr SJ(3)(4), Trairatvorakul P(5)(6)(7). This study aimed to identify factors, particularly positive parenting styles, associated with unmet dental needs, defined as no dental visit for the past 12 months, in children with developmental disabilities (DD). Participants included 263 primary caregivers of children with DD. Children exposed to less positive parenting styles were more than two times (aOR, 2.19, 95%CI, 1.12-4.32) more likely to have unmet dental needs. Children who were male (aOR, 1.88, 95%CI, 1.04-3.41), aged < 4 years (aOR, 2.95, 95%CI, 1.2-7.27) or aged  $\geq 11$  years (aOR, 2.65, 95%CI, 1.25-5.64), had higher illness severity (aOR, 2.04, 95%CI, 1.09-3.81), had primary caregivers with less than or equal to high school education (aOR, 2.45, 95%CI, 1.13-5.30) were also more likely to have unmet dental needs. DOI: 10.1007/s10803-021-05351-8 PMID: 35037185 [Indexed for MEDLINE]
- 93. Dental Caries in Children with Attention Deficit/Hyperactivity Disorder: A Meta-Analysis..** Caries Res. 2022;56(1):3-14. doi: 10.1159/000521142. Epub 2021 Dec 20. Drumond VZ(1), Souza GLN(2), Pereira MJC(3), Mesquita RA(4), Amin M(5), Abreu LG(2). OBJECTIVES: The aim of the study was to evaluate whether children with attention deficit/hyperactivity disorder (ADHD) are more affected by dental caries than children without ADHD by means of a systematic review and meta-analysis. DESIGN: Electronic searches were performed in 4 databases (PubMed, Embase, Scopus, and Web of Science) in July 2021. Grey literature

search in OpenGrey, a search in Google Scholar, and searches in the reference list of included articles were also conducted. The eligibility criteria were observational studies in which children with ADHD were compared with children without ADHD with respect to the dental caries. Study selection, data extraction, and risk of bias assessment, applying the Joanna Briggs tool were performed by 2 reviewers independently. Meta-analysis and assessment of heterogeneity among studies were conducted with the meta-package of RStudio using the R programming language (R Core Team, Vienna, Austria). Results of meta-analysis were provided in mean difference (MD), odds ratio (OR), and confidence intervals (CIs). For assessment of heterogeneity, Baujat plot and influence analysis plot were obtained. RESULTS: Thirteen studies were included and 10 were incorporated into meta-analyses. The meta-analysis showed that children with ADHD had a higher decayed, missing, and filled teeth (DMFT) index than their peers without ADHD ( $I^2 = 42\%$ ; MD = 0.75 [0.38-1.13]). For decayed, missing, and filled surfaces ( $I^2 = 0$ ; MD = 0.39 [-0.02 to 0.80]) and decayed surfaces (ds) ( $I^2 = 0\%$ ; MD = 0.35 [-0.63 to 1.33]), no difference between groups was observed. In addition, children with ADHD had higher odds of having dental caries than their healthy peers (OR = 3.31 [1.25, 8.73];  $I^2 = 0\%$ ). After assessment of heterogeneity among studies, sensitivity analysis was conducted for DMFT. One study was removed and the significant difference between groups remained. Children with ADHD had a significantly higher DMFT index than their peers without ADHD (MD = 0.98 [CI = 0.75, 1.20];  $I^2 = 0\%$ ) Risk of bias ranged from low to high. CONCLUSION: The main shortcoming of the included studies is the high risk of bias regarding the strategies to deal with confounding factors. Within its limitations, this systematic review and meta-analysis demonstrated that children with ADHD were more likely to develop dental caries than their healthy counterparts. FUNDING: No funding. REGISTRATION: CRD42021238923. DOI: 10.1159/000521142 PMID: 34929707 [Indexed for MEDLINE]

- 94. Periodontal outcomes of children and adolescents with attention deficit hyperactivity disorder: a systematic review and meta-analysis.** Eur Arch Paediatr Dent. 2022 Aug;23(4):537-546. doi: 10.1007/s40368-022-00732-8. Epub 2022 Jul 15. Drumond VZ(1), Andrade AA(2), de Arruda JAA(3), Mesquita RA(3), Abreu LG(4). BACKGROUND: This systematic review and meta-analysis aimed to answer the following question: Are children and adolescents with attention deficit hyperactivity disorder (ADHD) more likely to have gingival or periodontal disease-related outcomes than their non-ADHD peers? METHODS: Searches were conducted in the following databases: Embase, Scopus, Web of Science, and PubMed. Google Scholar and OpenGrey were also verified. Observational studies were included in which children and adolescents with ADHD were compared with their healthy peers in terms of gingival and/or periodontal endpoints. Bias appraisal was performed using the Joann Briggs tool for case-control and cross-sectional studies. Meta-analysis was performed using R language. Results are reported as mean difference (MD) and odds ratio (OR). Statistical analyses were performed in RStudio. RESULTS: A total of 149 records were identified in the searches. Seven studies were included. The meta-analysis showed that children and adolescents with ADHD had a higher mean gingival bleeding index (percentage) than their non-ADHD peers (MD = 11.25; CI = 0.08-22.41;  $I^2 = 73\%$ ). There was no difference between groups for plaque index (MD = 4.87; CI = - 2.56 to 12.30;  $I^2 = 63\%$ ) and gingivitis (OR = 1.42; CI = 0.22-9.21;  $I^2 = 76\%$ ). Regarding the assessment of risk of bias, the major issue found in the articles was the absence of analyses for the control of confounding factors. CONCLUSION: Children and adolescents with ADHD had more gingival bleeding than their non-ADHD peers, but no difference regarding plaque or gingivitis was detected between groups. CLINICAL REGISTRATION: CRD42021258404. DOI: 10.1007/s40368-022-00732-8 PMID: 35838891 [Indexed for MEDLINE]
- 95. Relationship between attention deficit hyperactivity disorder and temporomandibular disorders in adults: a questionnaire-based report.** Eur Rev Med Pharmacol Sci. 2022 Jun;26(11):3858-3871. doi: 10.26355/eurrev\_202206\_28953. Stelcer B(1), Sójka-Makowska A, Trzeczyńska N, Samborska J, Teusz G, Pryliński M, Łukomska-Szymańska M, Mojs E. OBJECTIVE: The symptoms of the attention deficit hyperactivity disorder (ADHD) persist in the adult years of life in most cases. They appear in adults with accompanying psychosocial problems. Temporomandibular disorder (TMD) refers to signs and symptoms associated with pain of non-dental origin in the oro-facial region, functional and structural disruptions of the masticatory system, especially the temporomandibular joints (TMJs) and masticatory muscles. The aim of the study was to show the relationship between the presence of ADHD symptoms in adulthood, in relation to the intensity of pain experienced in the face and problems connected to the TMD symptomatology, as well as sleep disorders. PATIENTS AND METHODS: The study group consisted of 252 individuals aged 18-55 years of both sexes, generally healthy. Each participant was asked to fill in several questionnaires, namely: ASRS (the World Health Organization ADHD Adult Self-Report Scale), DIVA (18 questions, 9 for concentration and attention disorders with an option in adulthood and childhood, 9 for hyperactivity and impulsivity with an option in adulthood and childhood), Athens Insomnia Scale, Stanford Sleepiness Scale (SSS), DC/TMD classification (Diagnostic Criteria for Temporomandibular Disorders - biaxial diagnostic criteria based on the biopsychosocial model). RESULTS: Results show that when ADHD symptoms observed in childhood persist, personality disorders, social relations disorders and affective disorders are found more often in adults than motor hyperactivity. CONCLUSIONS: There is a positive association between ADHD and the occurrence of symptoms of TMD in adults. This study confirmed this picture, extending it to include pain and sleep disorders. DOI: 10.26355/eurrev\_202206\_28953 PMID: 35731055 [Indexed for MEDLINE]

- 96. Down syndrome: orofacial pain, masticatory muscle hypotonia, and sleep disorders.** Sleep. 2022 Nov 9;45(11):zsac181. doi: 10.1093/sleep/zsac181. Diceri-Pereira B(1), Gomes MF(1), Giannasi LC(1), Nacif SR(2), Oliveira EF(1), Salgado MAC(1), de Oliveira Amorim JB(1), Oliveira W(3), Bressane A(4), de Mello Rode S(3). The aim of the present study was to investigate orofacial pain in individuals with Down syndrome (DS) and determine possible associations with masticatory muscle hypotonia (MMH), maximum mouth opening (MMO), and sleep disorders. Twenty-three individuals with DS underwent a standardized clinical examination using Axis I of the Diagnostic Criteria for Temporomandibular Disorders, for the diagnosis of pain in the masseter and temporal muscles and temporomandibular joint (TMJ). MMH was investigated using electromyography of the temporal and masseter muscles and the measurement of maximum bite force (MBF). MMO was measured using an analog caliper. Sleep disorders (obstructive sleep apnea [OSA], snoring index [SI], and sleep bruxism index [SBI]) were investigated using type II polysomnography. Statistical analysis was performed. Nonsignificant differences were found in muscle and TMJ pain between the sexes. However, myalgia and referred myofascial pain in the left masseter muscle were more frequent in males (69%) than females (40%). Electrical activity of the temporal (left:  $p = .002$ ; right:  $p = .004$ ) and masseter (left:  $p = .008$ ) muscles was significantly lower in males than in females. MBF range was lower in males than females, indicating the highest MMH among males. OSA, SI, and SBI were identified in both sexes, but with no statistically significant differences. We concluded that myalgia and referred myofascial pain were found in some individuals with DS, especially in males. Arthralgia was found mainly in females. Temporal and masseter myalgia may have exerted an influence on the severity of MMH in males, particularly on the left side. DOI: 10.1093/sleep/zsac181 PMID: 35907210 [Indexed for MEDLINE]
- 97. Panoramic radiographs and dental patients with Down syndrome: A scoping review** Spec Care Dentist. 2023 Mar;43(2):199-220. doi: 10.1111/scd.12762. Epub 2022 Aug 8. Scott AM(1), Reed WM(2), Ajwani S(3)(4), Parmenter TR(1). INTRODUCTION: Life expectancy for people with Down syndrome (DS) has increased to 60 years, although poor oral health affects their quality of life. Panoramic radiographs (PRs) are usually well-tolerated by people with DS and can provide valuable diagnostic data for treatment planning and research. Methods A scoping review of peer-reviewed articles published between 1971 and 2021 was conducted in accordance with the PRISMA extension for scoping reviews to determine the scope of use of PRs for people with DS. RESULTS: 937 papers were screened, and 52 papers were included and charted into seven categories in this review. A high prevalence of tooth agenesis (TA) and other anomalies were reported in 45% of papers. Severe periodontal disease was considered characteristic of DS in the 1970s-80s and the benefit of time-consuming treatment was questioned. Since 2000 case reports illustrate that improved oral care, orthodontic treatment, and dental implants under local or general anaesthetic can improve the quality of life for people with DS. CONCLUSION: PRs play an important role in the diagnosis of anomalies, periodontal disease, and implant planning for patients with DS. This review highlights the gaps in research of caries, pathology, TMJ, systemic disease indicators, and guidelines for dentists. Systematic PR viewing, with a knowledge of characteristic features of DS, will assist diagnosis of pathology and improve comprehensive dental care treatment planning for children and adults with DS. DOI: 10.1111/scd.12762 PMID: 35941085 [Indexed for MEDLINE]
- 98. Caregiving of children with Down syndrome: impact on quality of life, stress, mental and oral health.** Spec Care Dentist. 2022 Jul;42(4):398-403. doi: 10.1111/scd.12694. Epub 2022 Jan 10. Dias C(1), Schwertner C(1), Grando D(1), Bidinotto AB(1), Hilgert JB(1), Schuch JB(2), de Azeredo LA(3), Bauer ME(4), Hashizume LN(1). AIM: Parental caregivers of children with Down Syndrome (DS) have a greater burden of daily activities that may affect their health. The aim of this exploratory study was to evaluate the impact of caregiving of children with Down syndrome on parenting quality of life, stress, mental and oral health. METHODS: Fifty-four parental caregivers of children with DS and 51 parents of children without physical or mental disabilities participated of this study. All participants were clinically examined to evaluate the presence of dental caries, gingival conditions and answered a sociodemographic questionnaire. Depression, anxiety, quality of life and coping strategies were assessed using specific instruments. Hair cortisol level was assessed as biological marker of chronic stress. RESULTS: Psychological and quality of life parameters were similar between the groups of caregivers ( $p > .05$ ). Caregivers of children with DS were older (48.6 vs. 41.5,  $p < .001$ ), had longer caregiving period ( $> 10$  vs  $< 10$  years,  $p = .003$ ), presented higher gingival bleeding index (6.1 vs. 4.7,  $p = .014$ ) and higher cortisol levels (55.9 vs. 38.4,  $p = .07$ ) as compared with parents of children without disabilities. Sociodemographic data has no influence on cortisol levels ( $p > .05$ ). CONCLUSIONS: These findings suggest that the caregiving of children with DS has an impact on parenting oral health and stress. DOI: 10.1111/scd.12694 PMID: 35014048 [Indexed for MEDLINE]
- 99. Metallothioneins in Dental Implant Treatment Failure and Periodontitis in Patients with Down's Syndrome: Validation of Results.** Genes (Basel). 2022 Jun 8;13(6):1028. doi: 10.3390/genes13061028. Baus-Domínguez M(1), Gómez-Díaz R(2), Gutiérrez-Pérez JL(3)(4), Torres-Lagares D(1), Machuca-Portillo G(1), Serrera-Figallo MÁ(1). Metallothioneins (MTs) are low molecular weight cysteine-rich proteins that can bind up to seven zinc ions. Among their numerous functions, MTs appear to act as protectors against oxidative and inflammatory injury. In our first published study, we reported downregulation of the isoforms MT1B (fold distance (FD) -2.95;  $p = 0.0024$ ), MT1F (FD -1.72;  $p = 0.0276$ ), MT1X (FD -3.09;  $p = 0.0021$ ), MT1H (FD -2.39;  $p = 0.0018$ ), MT1M (FD -2.37;  $p = 0.0092$ ), MT1L (FD -2.55;  $p = 0.0048$ ), MT1E (FD -2.71;  $p = 0.0014$ ), MT2A (FD -2.35;  $p =$

0.0072), MT1G (FD -2.24;  $p = 0.0118$ ), and MT1A (FD -2.82;  $p = 0.0023$ ) by comparing Down's syndrome patients with periodontal disease and implant failure to those without periodontal disease and with a positive progression of their implants. In this gene validation study, we intended to verify the results of our first gene expression analysis. **Materials and Methods:** In our retrospective case-control study, we performed retrotranscription (RT-qPCR) of 11 RNA-to-cDNA samples using the SuperScript™ VIL0™ kit (50; reference 1,176,605) from Thermo Fisher. We conducted the study using the real-time PCR technique on the q-PCR ViiA 7 platform from Thermo Fisher. We chose the format of the Taqman Array Plate 16 Plus (reference 4,413,261) from Thermo Fisher, which accommodates 12 genes plus four controls (GAPDH, 18S, ACTB, and HPRT1). We conducted the analysis of the plates using the Thermo Fisher Cloud Web Software. **Results:** The results obtained through gene validation analysis show that in PD+RI+ patients, the genes encoding the isoforms MT1F (FD 0.3;  $p = 0.039$ ), MT1X (FD 338;  $p = 0.0078$ ), MT1E (FD 307;  $p = 0.0358$ ), and MT2A (FD 252;  $p = 0.0428$ ) continue to show downregulation, whereas MT1B (FD 2.75;  $p = 0.580$ ), MT1H (FD 281;  $p = 0.152$ ), MT1L (FD 354;  $p = 0.0965$ ), and MT1G (FD 336;  $p = 0.0749$ ) no longer show statistically significant results. DOI: 10.3390/genes13061028 PMID: 35741790 [Indexed for MEDLINE]

**100. Oral health status and quality of life of the parental caregivers of children with Down syndrome: A case-control study.** . J

Intellect Disabil. 2023 Mar;27(1):238-249. doi: 10.1177/17446295211048737. Epub 2022 Feb 11. Schwertner C(1), Silva CDD(1), Grandó D(1), Hilgert JB(1), Hashizume LN(1). The aim of this study was to investigate the oral health status and quality of life (QOL) of the parental caregivers of individuals with Down syndrome (DS), and to evaluate whether there is an association between these variables. The sample of this cross-sectional study was composed by parental caregivers of children with DS (CCDS) and parental caregivers of children without DS (CNDSC). Oral examination was undertaken and a questionnaire was given to participants. QOL was evaluated by WHOQOL-Bref. CCDS presented a higher number of dental prosthesis users and higher gingival bleeding index compared to CNDSC. When oral health was associated with QOL, the use of dental prosthesis was associated with physical domain and the variables having chronic disease and family income were associated with the social domain for both caregivers. The results suggest that caregivers of children with DS have similar oral health and QOL compared to caregivers of children without DS. In both caregivers, oral health status is associated with QOL. DOI: 10.1177/17446295211048737 PMID: 35144501 [Indexed for MEDLINE]

**101. Sinus lift technique and dental implants for rehabilitation for a Down syndrome patient with tomographic 3-years follow-up.** .

Spec Care Dentist. 2022 Sep;42(5):524-530. doi: 10.1111/scd.12697. Epub 2022 Jan 17. Comparin LL(1), Filho RP(1), Deliberador T(1), de Souza G(1), Tatim T(1), Müller PR(2), Moreno R(1). Down Syndrome or trisomy 21 (T21) is a genetic condition caused by the presence of an extra chromosome in pair 21 and is related to a high prevalence of agenesis of permanent teeth and periodontal alterations that may be associated to the loss of permanent teeth at early ages. With the increase in life expectancy of people with T21 in the last decades, it is necessary to expand the knowledge to offer possibilities of treatment with dental implants, aiming to serve this aging population. **AIMS:** The aim of this article is to report a surgical procedure of sinus lift to enable the installation of dental implants in the posterior region of the maxilla. **METHODS AND RESULTS:** A 50 year-old patient with T21 was rehabilitated with implants, simultaneously with sinus lift surgery, by the lateral window technique, using xenogenous bone graft and fibrin-rich plasma. After 1 year, the patient was rehabilitated with prosthetics on implants. **CONCLUSION:** The feasibility of this technique in patients with Down syndrome could be observed, after 3 years of follow up, with favorable clinical results. DOI: 10.1111/scd.12697 PMID: 35037271 [Indexed for MEDLINE]

**102. Association between oral care challenges and sensory over-responsivity in children with Down syndrome.**.. Int J Paediatr Dent.

2022 Jul;32(4):546-557. doi: 10.1111/ipd.12933. Epub 2021 Dec 29. Stein Duker LI(1), Martínez M(1), Lane CJ(2), Polido JC(3)(4), Cermak SA(1)(5). **BACKGROUND:** Sensory over-responsivity has been linked to oral care challenges in children with special healthcare needs. Parents of children with Down syndrome (cDS) have reported sensory over-responsivity in their children, but the link between this and oral care difficulties has not been explored. **AIM:** To investigate the relationship between sensory over-responsivity and oral care challenges in cDS. **DESIGN:** An online survey examined parent-reported responses describing the oral care of their cDS (5-14 years;  $n = 367$ ). Children were categorized as either sensory over-responders (SORs) or sensory not over-responders (SNORs). Chi-square analyses tested associations between groups (SORs vs. SNORs) and dichotomous oral care variables. **RESULTS:** More parents of SOR children than of SNOR reported that child behavior (SOR:86%, SNOR:77%;  $p < .05$ ) and sensory sensitivities (SOR:34%, SNOR:18%;  $p < .001$ ) make dental care challenging, their child complains about  $\geq 3$  types of sensory stimuli encountered during care (SOR:39%, SNOR:28%;  $p = .04$ ), their dentist is specialized in treating children with special healthcare needs (SOR:45%, SNOR:33%;  $p = .03$ ), and their child requires full assistance to brush teeth (SOR:41%, SNOR:28%;  $p = .008$ ). No intergroup differences were found in items examining parent-reported child oral health or care access. **CONCLUSIONS:** Parents of SOR children reported greater challenges than parents of SNOR children at the dentist's office and in the home, including challenging behaviors and sensory sensitivities. DOI: 10.1111/ipd.12933 PMID: 34622519 [Indexed for MEDLINE]

**103. Identifying metabolic parameters related to severity and extent of periodontitis in down syndrome patients.** J Periodontal

Res. 2022 Aug;57(4):904-913. doi: 10.1111/jre.13028. Epub 2022 Jun 22. Mouchrek MMM(1), Franco MM(1), da Silva LA(1),

Martins KAC(1), Conceição SIOD(2), Rodrigues VP(1), Benatti BB(1). BACKGROUND AND OBJECTIVE: Systemic metabolic status and periodontitis can be related in patients with Down syndrome (DS). The objective of this study was to identify metabolic indicators (anthropometric measurements, blood pressure, and serum markers) related to severity and extent of periodontitis in DS patients. METHODS: A cross-sectional study was conducted with 49 patients with DS. Periodontal evaluation included the periodontal probing depth (PPD), clinical attachment level (CAL), gingival bleeding index (GBI), and visible plaque index (VPI). Periodontitis severity was classified by the stages system. The extent of periodontitis was assessed as the percentage of sites with CAL  $\geq 3$  mm, CAL  $\geq 4$  mm, PPD  $\geq 4$  mm, and PPD  $\geq 5$  mm. The metabolic condition of the participants was determined by analyzing anthropometric parameters, blood pressure, and serum markers. Data were analyzed using the Mann-Whitney test, Spearman's correlation coefficient, and multivariate regression analysis. RESULTS: Periodontitis stage 3/4 was detected in 32.7% of patients, with high values of VPI ( $54.6 \pm 35.8$ ) and GBI ( $42.4 \pm 33.3$ ). The severity of periodontitis was related to higher mean corpuscular hemoglobin ( $\beta = .291$ ,  $p = .028$ ) and mean corpuscular volume values ( $\beta = .293$ ,  $p = .046$ ). Arm circumference measurements were inversely related to CAL  $\geq 3$  mm ( $\beta = -.408$ ,  $p = .023$ ), PPD  $\geq 4$  mm ( $\beta = -.475$ ,  $p = .006$ ), and PPD  $\geq 5$  mm ( $\beta = -.443$ ,  $p = .010$ ). CONCLUSIONS: The findings suggest that the severity and extent of periodontitis may be related to some metabolic parameters in DS patients. DOI: 10.1111/jre.13028 PMID: 35730357 [Indexed for MEDLINE]

**104. Comparison of Contributing Risk Factors for Primary Tooth Caries in Down Syndrome and Non-Special Health Needs Children** *Pediatr Dent.* 2022 Sep 15;44(5):355-362. Discepolo K(1), Herzog C(2), Anderson NK(3), Chandwani N(4) **urpose:** To evaluate decayed, missing, and filled surfaces in primary teeth (dmfs) in Down syndrome subjects (DS) compared to typically developed (TD) controls using analysis. **Methods:** A retrospective study of 440 matched subjects (220 DS and 220 TD) was conducted. Categorical variables were evaluated for association with dental caries, with mean dmfs as the main outcome measure. Pearson's chi-square and independent sample t-tests for unequal variances for means were employed. **Results:** Overall, the TD control group was found to have significantly higher mean dmfs scores than the DS group: TD Equals 17.65 (mean dmfs), 95% confidence interval (CI) equals 15.48 to 19.90; DS equals 10.30 (mean dmfs), at 95% CI equals 7.96 to 12.78, ( $P < 0.001$ ). However, when controlled for the variable factors African American status ( $P = 0.11$ ), Hispanic status ( $P = 0.07$ ) and income level at or below 200 percent of poverty level ( $P = 0.24$ ) there was no significant difference in mean dmfs. **Conclusions:** In the study population DS and TD exhibited dissimilar dmfs scores, while when taking into consideration social and economic factors dmfs was equivalent. Caries risk factors modulate disease experience and should be considered in all population-specific studies. Patients with multiple high-risk factors should be treated as such, regardless of DS status. PMID: 36309787 [Indexed for MEDLINE]

**105. Characterization of the unique oral microbiome of children with Down syndrome** *Sci Rep.* 2022 Aug 19;12(1):14150. doi: 10.1038/s41598-022-18409-z. Mitsuhashi C(1), Kado N(2), Hamada M(3), Nomura R(2), Kozai K(2). Down syndrome creates an abnormal oral environment, including susceptibility to periodontal disease at a young age, but there are no detailed studies of the oral microbiome in children with Down syndrome. In this study, we performed a comprehensive analysis of the oral bacteria of 40 children with Down syndrome and 40 non-Down syndrome children. Microbial DNA was extracted from dental plaque specimens and the V4 hypervariable region of the bacterial 16S rRNA gene was analyzed using the MiSeq platform. There were significant differences between the Down syndrome and non-Down syndrome groups in mean numbers of operational taxonomic units, and  $\alpha$ - and  $\beta$ -diversity ( $P < 0.05$ ). Interestingly, significant differences in  $\alpha$ - and  $\beta$ -diversity between the two groups were only observed in subjects with gingival inflammation, but not in those without gingival inflammation ( $P < 0.05$ ). Taxonomic analysis at the genus or species levels showed significant differences in relative abundance levels of certain bacteria between the Down syndrome and non-Down syndrome groups, including *Corynebacterium*, *Abiotrophia* and *Lautropia* ( $P < 0.05$ ). These results suggest that children with Down syndrome may have a unique oral microbiome that could impact the development of dental diseases common in people with the syndrome. DOI: 10.1038/s41598-022-18409-z PMID: 35986204 [Indexed for MEDLINE]

**106. Access to oral health care for children with fetal alcohol spectrum disorder: a cross-sectional study.** *BMC Oral Health.* 2022 Nov 16;22(1):497. doi: 10.1186/s12903-022-02561-z. Hu K(1), Da Silva K(2). **BACKGROUND:** Individuals with developmental disabilities, including Fetal Alcohol Spectrum Disorder (FASD), often suffer from poorer oral health than the general population as they experience challenges with accessing care. However, few studies have investigated access to oral health care specific to children diagnosed with FASD. Thus, the objective of this cross-sectional study is to examine the use of oral health care services by children diagnosed with FASD in Saskatchewan, Canada, and to identify perceived barriers that affect their access to oral health care. **METHODS:** Parents or caregivers for children with FASD under the age of 16 were recruited through community organizations. Between July 2020 and January 2021, 189 participants completed a 64-item questionnaire that assessed sociodemographic characteristics, oral health care utilization, and perceived barriers to care. **RESULTS:** Most children (85%) had visited the dentist within the last 24 months. 55% of children had required sedation for some treatment. 43% of caregivers experienced frustration trying to access care for their child. Common barriers were cost (63%), location (55%), the child's behaviour (78%) and caregiver anxiety (60%). 35% of caregivers believed their dentist lacked adequate knowledge of FASD.

Univariate analysis reveals that income, caregiver education, residence location, and insurance status were significantly associated with reporting barriers. Multivariate logistic regression analysis reveals that caregivers who reported a high school education (OR=1.23; 95% CI 1.03 - 1.38); or public insurance (OR=1.33; 95% CI 1.24 - 1.42) or out-of-pocket payments (OR=1.37, 95% CI 1.20 - 1.46); or rural (OR=1.19, 95% CI 1.07 - 1.26) or remote (OR=1.23; 95% CI=1.12 - 1.31) residences were more likely to report difficulties accessing oral health care. CONCLUSION: Our findings indicate that children with FASD experience various barriers to accessing oral health care. Social determinants of health were significant variables that increased likelihood of barriers. Like other vulnerable populations, cost and clinic location are notable barriers. Oral health care providers' assessment and management of children with FASD are noteworthy for future research. DOI: 10.1186/s12903-022-02561-z PMID: PMC9670607 PMID: 36384583 [Indexed for MEDLINE]

## **Other Syndromes**

- 107. Oral and cephalometric study in Brazilian Rubinstein-Taybi syndrome patients.** Spec Care Dentist. 2022 Mar;42(2):143-148. doi: 10.1111/scd.12645. Epub 2021 Sep 30. Martins F(1)(2), Roussen AC(1), Rezende N(1), Hiraoka C(1), Zamunaro M(1), Gallottini M(1). OBJECTIVE: The purpose of this study was to describe a detailed investigation of craniofacial and dental characteristics in a group of Brazilian Rubinstein-Taybi syndrome (RSTS) patients. METHODS AND RESULTS: Thirteen RSTS patients treated in a special care dental clinic after 10 years were studied. Panoramic radiographs were obtained from all patients, and cephalometric analysis was performed in eight patients. Five male and eight white female patients with a median age of 11.7 years were analyzed. All the RSTS patients were mouth breathers and presented malocclusion, transverse hypoplastic maxilla, nine subjects (9/13; 69.2%) had posterior crossbite, and eight (61.53%) exhibited talon cusps. Most patients presented class II skeletal pattern and were brachycephalic. Regarding systemic disorders, one patient (7.69%) reported seizure episodes during childhood, and four patients (30.76%) presented heart valve disorders. All patients presented reduced attention span, low intolerance to dental interventions, impulsiveness, and irritability. CONCLUSIONS: Since RSTS exhibits oral and skeletal changes, early dental treatment is essential for these patients. Dentists must be aware of medical problems related to heart disease and persist in conditioning techniques to obtain cooperation and avoid dental care under general anesthesia. DOI: 10.1111/scd.12645 PMID: 34590347 [Indexed for MEDLINE]
- 108. Oral Health Status in Marfan Syndrome: A Systematic Review and Meta-Analysis of 353 Cases.** Int J Environ Res Public Health. 2022 Apr 21;19(9):5048. doi: 10.3390/ijerph19095048. Alam MK(1), Alfawzan AA(2), Shrivastava D(3), Srivastava KC(4), Alswairki HJ(5), Mussallam S(6), Abutayyem H(7), Ahmed N(8)(9). This meta-analysis aimed to compare Marfan syndrome (MFS) patients with non-MFS populations based on orofacial health status to combine publicly available scientific information while also improving the validity of primary study findings. A comprehensive search was performed in the following databases: PubMed, Google Scholar, Scopus, Medline, and Web of Science, for articles published between 1 January 2000 and 17 February 2022. PRISMA guidelines were followed to carry out this systematic review. We used the PECO system to classify people with MFS based on whether or not they had distinctive oral health characteristics compared to the non-MFS population. The following are some examples of how PECO is used: P denotes someone who has MFS; E stands for a medical or genetic assessment of MFS; C stands for people who do not have MFS; and O stands for the orofacial characteristics of MFS. Using the Newcastle-Ottawa Quality Assessment Scale, independent reviewers assessed the articles' methodological quality and extracted data. Four case-control studies were analyzed for meta-analysis. Due to the wide range of variability, we were only able to include data from at least three previous studies. There was a statistically significant difference in bleeding on probing and pocket depth between MFS and non-MFS subjects. MFS patients are more prone to periodontal tissue inflammation due to the activity of FBN1 and MMPs. Early orthodontic treatment is beneficial for the correction of a narrow upper jaw and a high palate, as well as a skeletal class II with retrognathism of the lower jaw and crowding of teeth. DOI: 10.3390/ijerph19095048 PMID: PMC9101956 PMID: 35564443 [Indexed for MEDLINE]
- 109. Craniofacial morphology in Apert syndrome: a systematic review and meta-analysis.** Sci Rep. 2022 Apr 5;12(1):5708. doi: 10.1038/s41598-022-09764-y. Alam MK(1), Alfawzan AA(2), Srivastava KC(3), Shrivastava D(4), Ganji KK(4), Manay SM(4). This meta-analysis aims to compare Apert syndrome (AS) patients with non-AS populations (not clinically or genetically diagnosed) on craniofacial cephalometric characteristics (CCC) to combine publicly available scientific information while also improving the validity of primary study findings. A comprehensive search was performed in the following databases: PubMed, Google Scholar, Scopus, Medline, and Web of Science, an article published between 1st January 2000 to October 17th, 2021. PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines were followed to carry out this systematic review. We used the PECO system to classify people with AS based on whether or not they had distinctive CCC compared to the non-AS population. Following are some examples of how PECO has been used: People with AS are labeled P; clinical or genetic diagnosis of AS is labeled E; individuals without AS are labeled C; CCC of AS are labeled O. Using the Newcastle-Ottawa Quality-

Assessment-Scale, independent reviewers assessed the articles' methodological quality and extracted data. 13 studies were included in the systematic review. 8 out of 13 studies were score 7-8 in NOS scale, which indicated that most of the studies were medium to high qualities. Six case-control studies were analyzed for meta-analysis. Due to the wide range of variability in CCC, we were only able to include data from at least three previous studies. There was a statistically significant difference in N-S-PP (I2: 76.56%; P = 0.014; CI 1.27 to -0.28) and Greater wing angle (I2: 79.07%; P = 0.008; CI 3.07-1.17) between AS and control subjects. Cleft palate, anterior open bite, crowding in the upper jaw, and hypodontia occurred more frequently among AS patients. Significant shortening of the mandibular width, height and length is the most reported feature in AS patients. CT scans can help patients with AS decide whether to pursue orthodontic treatment alone or to have their mouth surgically expanded. The role of well-informed orthodontic and maxillofacial practitioners is critical in preventing and rehabilitating oral health issues. DOI: 10.1038/s41598-022-09764-y PMID: 35383244 [Indexed for MEDLINE]

- 110. Oral findings and healthcare management in Shashi-Pena syndrome.** Spec Care Dentist. 2022 Jul;42(4):432-436. doi: 10.1111/scd.12689. Epub 2021 Dec 13. Alqaisi D(1), Hassona Y(1)(2). Shashi Pena syndrome (SHAPNS) is a newly recognized and rare neurodevelopmental disorder with unique phenotypic features. The syndrome is caused by truncating variants in ASXL2 gene. To date, there are only seven documented cases in scientific literature, but oral and dental findings are sparsely reported. Here, we present a new case of SHAPNS and describe the oro-dental findings and oral healthcare management of affected patients. DOI: 10.1111/scd.12689 PMID: 34902171 [Indexed for MEDLINE]
- 111. SHORT Syndrome: Systematic Appraisal of the Medical and Dental Phenotype.** Cleft Palate Craniofac J. 2022 Jul;59(7):873-881. doi: 10.1177/10556656211026859. Epub 2021 Jul 2. Mubeen S(1), Gibson C(1), Mubeen R(2), Mansour S(3), Evans RD(1). INTRODUCTION: SHORT syndrome is a rare autosomal dominant condition described by its acronym of short stature, hyperextensibility of joints and/or inguinal hernia, ocular depression, Rieger abnormality, and teething delay. Individuals have a distinct progeroid craniofacial appearance with a triangular face, frontal bossing, hypoplastic or thin alae nasi, large low-set ears, and mandibular retrognathia. OBJECTIVES: To systematically appraise the literature and update the clinical phenotype with emphasis on the dental condition. DESIGN: A systematic literature search was carried out to update the clinical phenotype, identifying reports of individuals with SHORT syndrome published after August 2015. The same search strategy but not limited to publication date was carried out to identify reports of the dental phenotype. Two independent reviewers screened 1937 articles with 55 articles identified for full-text review. RESULTS: Nineteen individuals from 11 families were identified. Facial dysmorphism including ocular depression, triangular shaped face, frontal bossing, large low-set ears, and micrognathia were the most consistent features followed by lipodystrophy, insulin resistance, and intrauterine growth restriction. Teething delay, microdontia, hypodontia, and enamel hypoplasia have all been reported. CONCLUSION: Features that comprise the SHORT acronym do not accurately or completely describe the clinical phenotype. The craniofacial appearance is one of the most consistent features. Lipodystrophy and insulin resistance may also be considered cardinal features. After teething delay, enamel hypoplasia and microdontia are the most common dental manifestations. We present recommendations for the dental and orthodontic/orthognathic management of individuals with SHORT syndrome. DOI: 10.1177/10556656211026859 PMID: 34212753 [Indexed for MEDLINE]
- 112. Dental manifestations of a paediatric patient with Goldenhar syndrome.** J Pak Med Assoc. 2022 Nov;72(11):2305-2307. doi: 10.47391/JPMA.4152. Al Ghamdi SA(1). Goldenhar syndrome (GS) is a rare congenital disorder. It arises from the first pharyngeal pouch, first branchial cleft, first and second branchial arches, and primordia of the temporal bone. It mainly involves abnormalities in the ear, mandibular, and maxillary arches, and is associated with variable clinical features such as skeletal, cardiac, and renal systems. The presence of extra teeth in the dental arch is called supernumerary teeth, and hypodontia refers to congenitally missing teeth. The occurrence of both these anomalies in the same patient is called concomitant hypohyperdontia. However, the GS itself is not very rare, though the presence of concomitant hypohyperdontia has not been reported. The purpose of the present case report is to describe the first case from Saudi Arabia with a characteristic combination of rare findings in a seven-year-old child with comprehensive oral rehabilitation. DOI: 10.47391/JPMA.4152 PMID: 37013309 [Indexed for MEDLINE]
- 113. Oral Care in a Patient with Long Arm Deletion Syndrome of Chromosome 18: A Narrative Review and Case Presentation.** Am J Case Rep. 2022 Jun 24;23:e936142. doi: 10.12659/AJCR.936142. Pisano M(1), Sangiovanni G(1), D'Ambrosio F(1), Romano A(1), Di Spirito F(1). BACKGROUND Long arm (q) deletion syndrome of chromosome 18 is a congenital chromosomal disorder. The specialist dental management of patients with 18q deletion is a challenge, as these individuals fall into the category of patients with special needs. The aim of this work was to describe the surgical and dental management in hospital of a patient with long arm deletion syndrome of chromosome 18 (18q). CASE REPORT An 8-year-old patient with deletion syndrome of chromosome 18 (18q) was referred to the Department of Dentistry and Oral Surgery. The patient presented dental pain and difficult feeding. The examination of the oral cavity revealed a destructive carious lesion of the lower right second deciduous molar and the need to perform a frenectomy due to the short lingual frenulum, which limited the movements of the tongue. Given the complex management of the patient, it was necessary to carry out surgical procedures in the operating room. Frenectomies of the lower

labial and lingual frenulum were carried out with the aid of an electric scalpel with an ultra-sharp microdissection needle. At 2-month follow-up, the patient presented with good extraction site healing and satisfactory lingual mobility, along with improvements of speech and feeding. CONCLUSIONS Dental involvement in patients with deletion syndrome of the long arm of chromosome 18 is poorly documented in the literature. The hospital regimen appears to be the criterion standard for the management of the patient with long arm deletion syndrome of chromosome 18. DOI: 10.12659/AJCR.936142 PMID: PMC9642336 PMID: 35746851 [Indexed for MEDLINE]

- 114. Total Intravenous Anesthesia in a Malignant Hyperthermia-Susceptible Patient with Klinefelter Syndrome Undergoing Orthognathic Surgery.** J Craniofac Surg. 2022 May 1;33(3):e290-e292. doi: 10.1097/SCS.0000000000008147. Epub 2021 Oct 11. Lee JY(1), Choi MH, Park JU. A patient with Klinefelter syndrome and skeletal Class III malocclusion experienced a malignant hyperthermia-like reaction while undergoing orthognathic surgery. The patient fully recovered after prompt diagnosis and management, and surgery was reattempted under total intravenous anesthesia. The patient was discharged without any anesthetic complications and was satisfied with the surgical results. This is the first described case of a malignant hyperthermia-like event in a patient with Klinefelter syndrome. Total intravenous anesthesia may be safely administered in malignant hyperthermia-susceptible patients who require orthognathic surgery. DOI: 10.1097/SCS.0000000000008147 PMID: 34636754 [Indexed for MEDLINE]
- 115. Nonsurgical orthodontic treatment for a patient with Sotos syndrome.** Am J Orthod Dentofacial Orthop. 2023 Mar;163(3):426-442. doi: 10.1016/j.ajodo.2021.11.021. Epub 2022 Nov 24. Shioyasono R(1), Yoshinaga K(2), Shioyasono A(3), Ito A(1), Watanabe K(4), Hiasa M(4), Horiuchi S(1), Tanaka E(5). Sotos syndrome is a genetic disorder characterized by overgrowth in childhood, specific facial manifestations, advanced bone age, and mental retardation. The purpose of this article is to describe the nonsurgical orthodontic treatment of a 10-year-old boy with a skeletal mandibular protrusion, unilateral posterior crossbite, and Sotos syndrome. After maxillary lateral expansion, the skeletal Class III relationship with an anterior crossbite improved because of mandibular clockwise rotation, whereas the facemask had a marginal effect. After growth at 16 years, he had a skeletal Class I relationship, and thus, conventional orthodontic treatment with preadjusted edgewise appliances was initiated. After 41 months of multibracket treatment, acceptable occlusion with a functional Class I relationship was obtained. One year postretention, few changes in occlusion and facial features were observed. Our results demonstrate that considering the maxillofacial vertical growth during the peripubertal period associated with Sotos syndrome, more attention should be paid to the early orthopedic treatment with the facemask and/or chin cap. DOI: 10.1016/j.ajodo.2021.11.021 PMID: 36437146 [Indexed for MEDLINE]
- 116. Crown heights in the permanent teeth of 47,XXY males and 47,XXX females.** Acta Odontol Scand. 2022 Apr;80(3):218-225. doi: 10.1080/00016357.2021.1989031. Epub 2021 Oct 19. Pentinpuro R(1)(2), Lähdesmäki R(1)(2), Pesonen P(2)(3), Alvesalo L(1). OBJECTIVE: Earlier results based on dental casts and radiographs have shown that additional X and Y chromosomes influence permanent and deciduous tooth crown sizes, with 47,XYY males exhibiting greater crown heights than 46,XY males. We studied here the effect of both X and Y chromosomes on tooth crown heights. MATERIAL AND METHODS: The series consisted of 48 47,XXY males, 22 of their male relatives, and seven 47,XXX females with five female relatives. The population controls consisted of 27 males and 33 females. Measurements of all applicable teeth except for the third molars on both sides of the jaws were made on panoramic radiographs with a sliding digital calliper. RESULTS: Apart from a few teeth, the mean crown heights in the 47,XXY males were greater than those in the male population controls, the differences being statistically significant for one tooth in the maxilla and ten teeth in the mandible. With the exception of two teeth, the 47,XXX females had taller tooth crowns than the female population controls, the differences in the two teeth being statistically significant. The 47,XXY males had greater tooth crown heights than the 47,XXX females, except in one tooth, and the differences were significant in two teeth. The tooth crown heights of the male relatives of the 47,XXY males and the female relatives of the 47,XXX females were close to those in the general population. CONCLUSIONS: The present results demonstrated the effect of additional X and Y chromosomes in increasing crown heights. The differences between the 47,XXY males and 47,XXX females indicated a stronger effect of a Y chromosome on tooth crown height than of an X chromosome. DOI: 10.1080/00016357.2021.1989031 PMID: 34666610 [Indexed for MEDLINE]
- 117. Apical root resorptions in girls with Turner syndrome: a controlled longitudinal study.** Eur J Orthod. 2022 Dec 1;44(6):705-710. doi: 10.1093/ejo/cjac024. Kjellberg H(1), Lundgren T(2), Barrenäs ML(3), Rizell S(4). OBJECTIVES: To study, longitudinally, the development of apical root resorptions (ARRs) in Turner syndrome (TS) and to correlate these to the karyotype and orthodontic treatment. MATERIALS AND METHODS: Thirty girls with TS participated in the study, mean age 10.8 years (6.6-23.4) at the first registration (T1), and 14.3 years (9.2-25.2) at the second registration (T2). Forty girls without TS, orthodontically untreated, served as controls. ARR was diagnosed in panoramic radiographs, and root/crown ratios of the lower permanent first molar were measured at T1 and T2 with a mean follow-up period of 42 (11-89) months. RESULTS: During the follow-up period, ARR was seen in 40% of all TS patients and in 2.5% in the control group. The majority displayed ARR on the distal root of the mandibular first permanent molars (30%). ARR at T2 was seen in 56% of 45,X and isochromosome karyotype and 21% of every

other TS karyotype patients. AAR was seen in 5 out of 12 TS patients with orthodontic treatment. No statistically significant differences in root/crown ratios between T1 and T2 were found. LIMITATIONS: The number of patients studied is limited, thus possible differences might be disguised for this reason. Spatial projection errors in panoramic radiograph recordings might have influenced measurement, resulting in an underestimation of ARR. CONCLUSIONS: There is a higher risk for ARR in girls with TS and probably the risk is therefore probably also higher during orthodontic treatment. Thus, if treated, frequent radiographic follow-ups should be taken during the treatment. PROTOCOL: The protocol was not published before trial commencement. DOI: 10.1093/ejo/cjac024 PMID: 35583217 [Indexed for MEDLINE]

- 118. Severe Bleeding During Orthognathic Surgery for a Noonan Syndrome Patient.** *Anesth Prog.* 2022 Dec 1;69(4):22-25. doi: 10.2344/anpr-69-02-02. Sasaki H(1), Mizuta K(1). Noonan syndrome (NS) is a genetic disorder characterized by craniofacial dysmorphism, chest deformities, congenital heart defects, and bleeding disorders. Although patients with NS have a high prevalence of orofacial deformity, few reports are available on their anesthetic management during orthognathic surgery. This case report describes a 31-year-old female with NS, anemia, hypertrophic cardiomyopathy, and mild mitral valve regurgitation who experienced severe bleeding during orthognathic surgery. After treating her anemia with oral iron therapy and subcutaneous epoetin  $\beta$ , 4 units of autologous blood was deposited prior to surgery. General anesthesia was induced with remifentanil and propofol and maintained with sevoflurane, remifentanil, and fentanyl. Despite mild hypotensive anesthesia (targeted mean arterial pressure of 65 mm Hg) with nitroglycerine and intravenous tranexamic acid for bleeding, adequate hemostasis was difficult to achieve and led to severe blood loss (1442 mL). Therefore, the 4 units of autologous blood and 2 units of packed red blood cells were transfused. Her postoperative course proceeded uneventfully without abnormal postoperative bleeding. Because patients with NS can have difficulty with hemostasis, vascular malformations, and fragile blood vessels, extensive hematologic evaluation and thorough preparation for unexpected bleeding are crucial to accomplish orthognathic surgery. DOI: 10.2344/anpr-69-02-02 PMID: 36534772 [Indexed for MEDLINE]
- 119. Methemoglobinemia Induced by Prilocaine in a Child With Noonan Syndrome.** *Anesth Prog.* 2022 Sep 1;69(3):25-29. doi: 10.2344/anpr-69-02-01. Takagi S(1), Ando S(1), Kono R(1), Oono Y(1), Nagasaka H(2), Kohase H(1). Limited information is currently available on methemoglobinemia caused by the administration of prilocaine in children undergoing dental procedures in Japan. This case report presents the development of methemoglobinemia due to prilocaine overdose. The patient was a female aged 5 years 8 months with Noonan syndrome who also had pulmonary valve stenosis and hypertrophic cardiomyopathy. She presented with severe dental caries affecting 12 total teeth and required general anesthesia due to a lack of cooperation during dental treatment. General anesthesia was performed, during which 3% prilocaine with 0.03 IU/mL felypressin was administered intraoperatively via infiltration. Her SpO<sub>2</sub> gradually decreased after 30 minutes, and cyanosis was observed postoperatively. Several assessments including a 12-lead electrocardiogram, an anteroposterior chest radiograph, and venous blood gas analysis were performed to identify potential causes. However, there were no indications of acute respiratory or cardiovascular abnormalities. It was noted that a total of 192 mg prilocaine was administered during the procedure, and methemoglobinemia was suspected to have developed because of overdose. Further testing revealed an elevated serum methemoglobin of 6.9%, supporting methemoglobinemia as the cause of her decreased SpO<sub>2</sub>. In dental procedures that require the use of prilocaine to treat multiple teeth, particularly for pediatric patients, it is important to carefully manage prilocaine dosing, as an overdose may lead to methemoglobinemia. DOI: 10.2344/anpr-69-02-01 PMID: 36223191 [Indexed for MEDLINE]
- 120. Otodental syndrome: Case report and differential diagnosis with Treacher Collins syndrome.** *Eur J Paediatr Dent.* 2022 Mar;23(1):66-58. doi: 10.23804/ejpd.2022.23.01.12. Paglia M(1), Giani G(1), Pisoni L(1), Paglia L(1). BACKGROUND: Otodental syndrome and Treacher Collins syndrome are rare diseases that have similar clinical features, which can complicate the diagnostic process. These syndromes cause skeletal and dental abnormalities, the differential diagnosis can be based on clinical signs but only the genetic analysis can confirm it. The aim of this case report is to describe and compare clinical signs of these syndromes. CASE REPORT: A 7-year-old patient came to our department: he presented abnormal tooth shapes and sizes, delayed teeth replacement and micrognathia. After extra- and intra-oral examination and radiographic exams, a clinical diagnosis of otodental syndrome was made, and a genetic testing was requested to confirm the diagnosis. CONCLUSION: Dental management of patients with otodental syndrome is challenging due to agenesis, teeth malformation, lack of space for permanent dentition. Proper treatment decision is crucial to obtain the best result for the patient. DOI: 10.23804/ejpd.2022.23.01.12 PMID: 35274545 [Indexed for MEDLINE]
- 121. Dental management of a pediatric patient with Kohlschutter-Tonz syndrome: A case report.** *Spec Care Dentist.* 2022 May;42(3):308-311. doi: 10.1111/scd.12674. Epub 2021 Nov 12. Kulkarni R(1), Caster JM(2), Robin A(3), Hajishengallis E(4), Stoopler ET(1), Tanaka TI(1). INTRODUCTION: Kohlschutter-Tonz syndrome (KTS) is a rare, genetic condition, which typically manifests as a triad of symptoms: 1) amelogenesis imperfecta, 2) infantile onset epilepsy, and 3) intellectual disability. The condition poses dental treatment challenges given the manifestation of amelogenesis imperfecta. Additional considerations are needed to medically manage these patients who present with epilepsy and intellectual disability. CASE REPORT: Our patient

presented with multiple restorative needs, was treated under general anesthesia, and maintained good oral outcomes with close follow-up. DISCUSSION: To the best of our knowledge, this is the first case report which documents comprehensive dental management of a pediatric patient with KTS. DOI: 10.1111/scd.12674 PMID: 34766639 [Indexed for MEDLINE]

- 122. Determination of craniofacial and dental characteristics of individuals with Williams-Beuren syndrome by using 3D facial scans and radiographs** Orthod Craniofac Res. 2022 Aug;25(3):359-367. doi: 10.1111/ocr.12541. Epub 2021 Oct 21. Danneels F(1), Verdonck A(1), Indencleef K(2), Declerck D(3), Willems G(1), Cadenas De Llano-Pérula M(1). BACKGROUND: Williams-Beuren syndrome (WBS) is caused by a microdeletion on chromosome 7q11-23 and clusters a variety of systemic affectations. AIM: To investigate whether 3D facial scans can detect WBS by objectively addressing their craniofacial, skeletal and dental characteristics, compared with those of a non-affected control group. MATERIALS AND METHODS: 3D facial surface scans of 17 WBS individuals and 33 normal developing patients were analysed. Additionally, cephalometric and panoramic radiographs of subjects with WBS were compared with those of non-affected individuals. RESULTS: The 3D surface scans showed significant facial differences around the nose and mouth area. The cephalometric aspects of individuals with WBS differed mainly at the lower incisor region. Additionally, hypoplastic tooth morphology seems to be more often present in WBS. CONCLUSION: 3D images are a non-invasive, efficient method to observe facial anomalies and facilitate an early diagnosis of WBS. Additionally, the analysis of the cephalometric and panoramic images revealed significant differences in dental characteristics. Together with early diagnosis through 3D images, these can help in the establishment of adequate medical, dental and orthodontic treatment planning. DOI: 10.1111/ocr.12541 PMID: 34634190 [Indexed for MEDLINE]
- 123. Dental and health aspects in the co-occurrence of Treacher Collins and Down syndromes: Case report.** Spec Care Dentist. 2023 Jan;43(1):94-98. doi: 10.1111/scd.12735. Epub 2022 Jun 6. Campos PSSL(1), Taitson PF(2), Pinto da Silva LC(1), Leão LL(3). The goal of this case report is to identify the dental care of a patient who has co-occurrence of Treacher Collins and Down syndromes. It is the third case reported in the literature and the first relating dental treatment under general anesthesia and multidisciplinary importance. It was necessary the child's nutritional assessment in this case. This case highlights the importance of individualizing therapeutic protocols, due to the behavioral aspects of patients with special needs, optimizing treatment results in a single session under general anesthesia. Oral health is closely related to overall health, and it is important for awareness that the whole influences the success of medical treatment. DOI: 10.1111/scd.12735 PMID: 35667009 [Indexed for MEDLINE]
- 124. Dental management of a 26-year-old female with fibrodysplasia ossificans progressiva: A case report.** Spec Care Dentist. 2022 Mar;42(2):194-199. doi: 10.1111/scd.12649. Epub 2021 Sep 23. Hietanen B(1), Sullivan M(2), Frustino J(3), Cantie S(1), Kapral E(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. DOI: 10.1111/scd.12649 PMID: 34558083 [Indexed for MEDLINE]
- 125. Pulp chamber access alternative in pulpectomies in a child with Wolff-Parkinson-White syndrome. A case report.** Spec Care Dentist. 2022 May;42(3):294-298. doi: 10.1111/scd.12666. Epub 2021 Oct 13. Vilca Velazco MF(1), Lavado García L(2), Torres Ramos G(3), López Ramos RP(4). BACKGROUND: Wolff-Parkinson-White syndrome is a congenital abnormality of the heart. Patients with this syndrome and multiple dental caries with pulp exposure may require comprehensive dental treatment under general anesthesia. Pulpectomy is performed in primary teeth with pulp expose. This treatment in anterior teeth requires palatal access and the majority there is no good visibility, requiring more time to perform. Therefore, this case aimed to demonstrate a pulp chamber opening alternative in pulpectomies in a child with Wolff-Parkinson-White syndrome. CASE PRESENTATION: A 3-year-old female patient with Wolff-Parkinson-White syndrome and multiple dental caries with reversible

pulpitis in anterior upper teeth. The dental treatment was performed under general anesthesia. Due to abundant hemorrhage in anterior upper teeth, pulpectomies were performed, which pulp chamber openings were modified by labial and the treatment itself was completed. After, these teeth were rehabilitated with direct restorative veneers using light-curing composite resin. The follow-up at 12 months showed an absence of evidence clinic and radiographic. CONCLUSION: This case demonstrated the pulp chamber opening performed by labial in pulpectomy is an effective and viable alternative to reduce operative time and improve visibility in pulpotomies in a child with Wolff-Parkinson-White syndrome DOI: 10.1111/scd.12666 PMID: 34644402 [Indexed for MEDLINE]

**126.Oral and Craniofacial Anomalies of Fraser Syndrome:Prosthetic Management.** Kathmandu Univ Med J (KUMJ). 2022 Jul-Sep;20(79):391-395. Amornvit P (1), Rokaya D (2), Sapkota D (3), Sanohkan S (4). Fraser syndrome (FS, MIM 219000) is a rare autosomal disorder characterized by systemic and oro-facial malformation, usually comprising cryptophthalmos, laryngeal malformations, syndactyly, and urogenital defects. We presented a 21-year-old FS case with partial missing teeth seeking aesthetic dental treatment. Clinical examination revealed bilateral cryptophthalmos, extensive syndactyly of hands and feet broad nose with the depressed nasal bridge, and surgically corrected bilateral cleft lip. She presented class III jaw relation and reduced the vertical height of the face. Prosthetic rehabilitation of the patient was done with upper and lower overlay dentures made from acrylic resin (VIPI BLOCK TRILUX®, VIPI Industria, Pirassununga, SP, Brazil) using computer-aided design (CAD) and computer-aided manufacturing (CAM) process. At the follow-up visit, the patient presented improved aesthetics and function. Proper management and rehabilitation of FS patients are challenging, but standard guidelines for oral health management are currently lacking. This article presents a case of Fraser syndrome presenting oral and craniofacial anomalies, and prosthetic rehabilitation was done. We also provided recommendations for the optimal oral health care for the FS patients. Functional adaptation and rehabilitation have significant roles in the various functions, survival, and quality of the life of FS patients. Integrated medicaldental care is needed in such patients with support from family members, friends, and colleagues. PMID: 37042386 [Indexed for MEDLINE]

**127.Congenital anomalies-associated Riga-Fede disease as an early manifestation of Lesch-Nyhan syndrome: rare entities in the same pediatric patient-a case report.** BMC Oral Health. 2022 Feb 2;22(1):26. doi: 10.1186/s12903-022-02060-1. Eita AAB(1). BACKGROUND: Riga-Fede disease is a rare benign disorder of the oral tissues, it can be associated with congenital anomalies and neurological disturbances. Lesch-Nyhan syndrome is a rare X-linked recessive disorder characterized by neurological and behavioral manifestations. A patient can rarely be diagnosed with both diseases in a lifetime. Therefore, reporting manifestations from such disorders is important to avoid misdiagnosis and help in timely intervention. CASE PRESENTATION: This case report presents an 8-months-old male infant with traumatic oral ulcers from deciduous teeth. A diagnosis of Riga-Fede disease was made. Teeth grinding was performed and the oral lesions were healed. At the age of 2.5 years, the patient presented with neurological manifestations as well as facial tissue and premature teeth loss from self mutilation. Genetic sequencing revealed a variant of uncertain significance in the Hypoxanthine Phosphoribosyltransferase 1 gene. He was diagnosed with Lesch-Nyhan syndrome. Cleft palate, ventricular septal defect, congenitally undescended testis and ectopic left iliac kidney were also reported. The patient was scheduled on psychiatric treatment and after about six months of follow-up, both the behavioral and neurological symptoms were improved. CONCLUSIONS: Riga-Fede disease can be an early manifestation of Lesch-Nyhan syndrome. To the best of our knowledge, this is the first reported case with the incidence of all the mentioned entities in one pediatric patient. DOI: 10.1186/s12903-022-02060-1 PMID: 35109856 [Indexed for MEDLINE]

### **Other Conditions**

**128.Orthodontic and dentofacial orthopedic treatments in patients with ectodermal dysplasia: a systematic review.** Orphanet J Rare Dis. 2022 Oct 17;17(1):376. doi: 10.1186/s13023-022-02533-0. Cerezo-Cayuelas M(1), Pérez-Silva A(1), Serna-Muñoz C(1), Vicente A(2), Martínez-Beneyto Y(3), Cabello-Malagón I(1), Ortiz-Ruiz AJ(4). OBJECTIVE: The objective of this systematic review was to determine the orthodontic and dentofacial orthopedic treatments carried out in patients with ectodermal dysplasia to facilitate functional and aesthetic rehabilitation. METHODS: The systematic review was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-analysis statement. We systematically searched PubMed, Web of Science, Scopus, Scielo, LILACS, EBSCOhost and Embase databases up to 6 January 2022. We included articles describing patients with any type of ectodermal dysplasia who received orthodontic or dentofacial orthopedic treatment to facilitate functional and aesthetic oral rehabilitation. The search was not restricted by language or year of publication. The quality of the studies was assessed using the Joanna Briggs Institute Quality Assessment Scale of the University of Adelaide for case series and case reports. The review was registered at the University of York Centre for reviews (CRD42021288030). RESULTS: Of the initial 403 studies found, 29 met the inclusion criteria. After applying the quality scale, 23 were left for review-21 case reports and 2 case series. The initial age of patients ranged from 34 months to 24 years. Thirteen studies were on hypohidrotic and/or anhidrotic ectodermal dysplasia, of which two were X-chromosome linked. In one study, the patient had Wiktop syndrome, and

in nine the type of ectodermal dysplasia was not specified. The duration of treatment was 7 weeks to 10 years. The treatments described were: fixed orthodontic appliances or simple acrylic plates designed for tooth movement, including leveling and aligning, closing of diastemata, retraction of impacted teeth in the dental arch; clear aligners; fixed and/or removable appliances for the correction of skeletal and/or dentoalveolar relationships; palatal expanders in combination with face masks for orthopedic traction of the maxilla; and orthognathic surgery. Only three studies provided cephalometric data. CONCLUSION: The level of evidence of the articles reviewed was low and most orthopedic and dentofacial orthodontic treatments described were focused on correcting dental malpositioning and jaw asymmetries and not on stimulating growth from an early age. Studies with greater scientific evidence are needed to determine the best treatment for these patients. DOI: 10.1186/s13023-022-02533-0 PMID: PMC9575248 PMID: 36253866 [Indexed for MEDLINE]

**129. Oral Manifestations of Systemic Lupus Erythematosus: A Systematic Review.** *Int J Environ Res Public Health.* 2022 Sep 21;19(19):11910. doi: 10.3390/ijerph191911910. García-Ríos P(1), Pecci-Lloret MP(1), Oñate-Sánchez RE(1). Systemic lupus erythematosus (SLE) is a chronic autoimmune disease that is characterized by clinical heterogeneity and irregularities in its course. The etiology and pathogenesis of this pathology are not well-understood, so there is difficulty in establishing a diagnosis and treatment plan with certainty. The aim of this systematic review is to present a qualitative synthesis of studies referring to the oral manifestations of systemic lupus erythematosus (SLE). This systematic review was performed following the PRISMA guideline. On this basis, a search for articles was performed in the PubMed, Web of Science, and Scopus databases on 19 November 2021 and updated on 15 February 2022. We chose articles published between 2012 and 2022 that analyzed the oral manifestations of SLE patients. The quality of all these studies was analyzed following the STROBE scale. A total of 15 articles were included in this study after selection. The selected articles were cross-sectional, case-control, and cohort studies. The most frequently associated oral manifestations with SLE were oral ulcers, hyposalivation, pigmentations, glossodynia, cleft tongue, cheilitis, arthritis, and secondary Sjögren's syndrome. However, despite the importance of the perception of these oral manifestations in the early diagnosis of SLE, there are still not enough studies about them. DOI: 10.3390/ijerph191911910 PMID: PMC9565705 PMID: 36231212 [Indexed for MEDLINE]

**130. Causal Effect of Tooth Loss on Cardiovascular Diseases.** *J Dent Res.* 2023 Jan;102(1):37-44. doi: 10.1177/00220345221120164. Epub 2022 Sep 8. Matsuyama Y(1), Jürges H(2), Listl S(3). Many studies suggest associations between oral health and cardiovascular diseases, but there is a lack of causal evidence. Exploiting exogenous variation in tooth loss in US adults due to differential childhood exposure to fluoridated water, this study investigated the causal effect of tooth loss on cardiovascular diseases. A total of 722,519 participants in the Behavioral Risk Factor Surveillance System (BRFSS) waves 2006, 2008, or 2010 (birth years 1940-1978) were included in the analytical sample. To identify the effect of tooth loss on having a history of coronary heart disease (CHD) or stroke, instrumental variable analysis exploited childhood exposure to drinking water fluoride as an instrument. The weighted prevalence of CHD and stroke histories was 5.1% and 2.1%, respectively. First-stage regression indicated that childhood exposure to drinking water fluoride was a strong instrument for the number of lost teeth in adulthood (coefficient -0.61; 95% confidence interval [CI] -0.80, -0.41; F = 37.47). The probability of CHD was significantly higher by 1.04 percentage points (95% CI 0.57, 1.50) per lost tooth. The effect of tooth loss on stroke was significant only for people aged ≥60 y (coefficient 0.93 percentage points; 95% CI 0.14, 1.71). These findings are supportive of a causal effect of tooth loss on cardiovascular diseases among US adults, particularly in older age. DOI: 10.1177/00220345221120164 PMID: 36081340 [Indexed for MEDLINE]

**131. Salivation in Parkinson's disease: A scoping review.** *Gerodontology.* 2023 Mar;40(1):26-38. doi: 10.1111/ger.12628. Epub 2022 Mar 4 Verhoeff MC(1), Koutris M(1), Vries R(2), Berendse HW(3), Dijk KDV(3)(4), Lobbezoo F(1). OBJECTIVES: We aimed to provide an overview of the available literature that includes both objective assessments (namely hypersalivation and hyposalivation) and the subjective experience (namely xerostomia and drooling) of salivary problems in patients with Parkinson's disease. BACKGROUND: In patients with Parkinson's disease, there may be complaints of salivary problems such as xerostomia or drooling. This can have consequences for their oral health and quality of life. To date, systematic reviews have focused on drooling only. MATERIALS AND METHODS: A literature search in 4 databases was performed up to 12 February 2021. Two researchers independently assessed studies for eligibility. RESULTS: In total, 63 studies were included. The prevalence of self-reported xerostomia ranged from 49% to 77%, and that of self-reported drooling ranged from 5% to 80%. Ten articles reported a significantly lower mean salivary flow in patients with Parkinson's disease than in controls. None of the articles with both a control group and a patient group reported a significantly higher salivary flow in patients with Parkinson's disease. When questioned about subjective salivary problems, a significantly higher prevalence of both xerostomia (7 studies) and drooling (14 studies) was found in patients with Parkinson's disease than in controls. Patients with Parkinson's disease have a lower salivary flow rate and higher prevalence of both xerostomia and drooling than controls. CONCLUSION: The complexity of salivary problems present in patients with Parkinson's disease necessitates a multidisciplinary approach in order to avoid mutually counteracting treatments from different healthcare professionals. DOI: 10.1111/ger.12628 PMID: 35246869 [Indexed for MEDLINE]

- 132. Orofacial pain and dysfunction in patients with Parkinson's disease: A scoping review.** Eur J Pain. 2022 Nov;26(10):2036-2059. doi: 10.1002/ejp.2031. Epub 2022 Sep 16. Verhoeff MC(1), Koutris M(1), Tambach S(1), Eikenboom D(1), de Vries R(2), Berendse HW(3), van Dijk KD(3)(4), Lobbezoo F(1). BACKGROUND: Parkinson's disease (PD) is commonly known as a disorder that affects the smooth performance of body movements. In addition to the motor impairments, patients with PD often experience pain. Both motor impairments and pain can occur throughout the body, hence including the orofacial region. However, currently, there is a lack of knowledge on the orofacial manifestations. Since orofacial pain and dysfunction can, amongst others, reduce the quality of life of patients with PD, it is important to explore the prevalence of these symptoms in the PD population. OBJECTIVE: To provide a broad overview of the relevant literature on orofacial pain and dysfunction in patients with PD. Furthermore, we aim to generate hypotheses for future research on this topic. DATABASES AND DATA TREATMENT: A literature search (in PubMed, Embase.com, Web of Science [Core collection], and Cochrane Library) was performed on 20 January 2022, in collaboration with a medical librarian. In total, 7180 articles were found, of which 50 were finally included in this scoping review. RESULTS: In the included studies, pain (e.g. orofacial pain (N = 2) and temporomandibular disorder pain (N = 2)), orofacial motor dysfunction (e.g. limited jaw movements (N = 10), reduced maximum muscle output (N = 3), chewing difficulties (N = 9), unspecified TMD (N = 3), sensory disturbances (N = 1)), and bruxism (N = 3) were observed more often in patients with PD than in healthy controls. CONCLUSION: Patients with PD experience more pain in the orofacial area and more dysfunction of the masticatory system than their healthy peers. SIGNIFICANCE: This scoping review can increase health care providers' awareness of the problems that can be encountered in the orofacial area of PD patients, especially pain syndromes also occur in the orofacial region and not only in the extremities. Besides, dysfunction of the orofacial area is elaborated in this scoping review, which helps to understand that this limits PD patients' quality of life. Further, the outcomes of this scoping review can assist in encouraging collaboration between medicine and dentistry. Finally, this scoping review suggests new research areas, based on the gaps identified in the current literature on this topic. Ultimately, this will improve individualized strategies for reducing orofacial pain and/or dysfunction in PD patients. DOI: 10.1002/ejp.2031 PMID: 36063442 [Indexed for MEDLINE]
- 133. ORAL CHANGES IN PEDIATRIC PATIENTS WITH EATING DISORDERS.** Acta Clin Croat. 2022 Aug;61(2):185-192. doi: 10.20471/acc.2022.61.02.03. Lesar T(1), Vidović Juras D(2)(3), Tomić M(4), Čimić S(5), Kraljević Šimunković S(5). Numerous oral changes develop as a result of dysfunctional eating behavior in patients with eating disorders (ED). The aim of this study was to evaluate the correlation among oral manifestations, age, disease duration and nutritional status in pediatric patients with ED. The study included 50 female ED patients, median age 14 (range 10-18) years and median disease duration 9 (range 1-42) months. Nutritional status was expressed as z-score for body mass index (BMI). Mean BMI z-score was  $-2.10 \pm 1.64$ . The most commonly observed oral findings were dental plaque, marginal gingivitis, morsicatio, dental calculus, caries, pharyngeal erythema, exfoliative cheilitis and angular cheilitis. Dental plaque and pharyngeal erythema were correlated with shorter disease duration ( $p=0.048$ ;  $p=0.040$ ), while frictional keratosis of tongue was correlated with longer disease duration (0.011). Linea alba and pain in the temporomandibular joint were associated with younger age ( $p=0.012$ ;  $p=0.024$ ), and tooth impression on tongue with lower degree of nutrition ( $p=0.030$ ). This study showed that there was a link among oral manifestations, age, disease duration and degree of nutritional disorder, although further investigations comparing the groups of ED patients with different age, disease duration and nutritional status would give better, concrete and precise conclusions. DOI: 10.20471/acc.2022.61.02.03 PMID: 36818917 [Indexed for MEDLINE]
- 134. Oral health-related quality of life in 4-16-year-olds with and without juvenile idiopathic arthritis.** BMC Oral Health. 2022 Sep 6;22(1):387. doi: 10.1186/s12903-022-02400-1. Gil EG(1), Skeie MS(2)(3), Halbig J(4)(5), Jönsson B(4)(6), Lie SA(2), Rygg M(7)(8), Fischer J(2), Rosén A(2)(9), Bletsa A(2)(10), Luukko K(2), Shi XQ(2)(11), Frid P(4)(5)(12), Cetrelli L(3)(7), Tylleskär K(13), Rosendahl K(5)(14), Åström AN(2). BACKGROUND: Few studies have investigated oral health-related quality of life (OHRQoL) in young individuals with juvenile idiopathic arthritis (JIA). Aims were to investigate whether OHRQoL differs between children and adolescents with JIA compared to controls without JIA, while adjusting for socio-demographic-, behavioral- and oral health-related covariates. Furthermore, to explore whether socio-behavioral and oral health-related covariates of OHRQoL vary according to group affiliation and finally, specifically for individuals with JIA, to investigate whether disease-specific features associate with OHRQoL. We hypothesized that participants with JIA have poorer OHRQoL compared to participants without JIA. METHODS: In this comparative cross-sectional study participants with JIA (n = 224) were matched to controls without JIA (n = 224). OHRQoL was assessed according to Early Childhood Oral Health Impact Scale (ECOHIS) (4-11-years-olds) and the child version of Oral Impacts on Daily Performances (Child-OIDP) (12-16-years-olds). JIA-specific characteristics were assessed by pediatric rheumatologists and socio-demographic, behavioral and self-reported oral health information collected by questionnaires. Index teeth were examined for caries by calibrated dentists. Multiple variable analyses were performed using logistic regression, reporting odds ratio (OR) and 95% confidence interval (CI). Two-way interactions were tested between group affiliation and the socio-behavioral- and oral health-related variables on the respective outcome variables. RESULTS: In total, 96 participants with JIA and 98 controls were evaluated according to ECOHIS, corresponding numbers for Child-OIDP was 125 and

124. Group affiliation was not associated with impaired ECOHIS or Child-OIDP in adjusted analyses (OR = 1.95, 95% CI 0.94-4.04 and OR = 0.99, 95% CI 0.46-2.17, respectively). Female adolescents with JIA were more likely than males to report oral impacts according to Child-OIDP. Continued activity or flare was found to adversely affect Child-OIDP, also self-reported outcome measures in JIA associated with Child-OIDP. CONCLUSIONS: This study did not provide consistent evidence to confirm the hypothesis that children and adolescents with JIA are more likely to have impaired OHRQoL compared to their peers without JIA. However, female adolescents with JIA were more likely than males to report impacts on OHRQoL. Furthermore, within the JIA group, adolescents with continued disease activity, flare or reporting pain, physical disability, had higher risk than their counterparts of impaired OHRQoL. DOI: 10.1186/s12903-022-02400-1 PMID: PMC9450232 PMID: 36068497 [Indexed for MEDLINE]

**135. Dental management of a patient with systemic mastocytosis.** BMJ Case Rep. 2022 Apr 15;15(4):e249039. doi: 10.1136/bcr-2022-249039. Legge AR(1), Whyte A(2), Heywood S(3). Mastocytosis is a term encompassing a group of clinical disorders characterised by clonal proliferation of abnormal mast cells (MCs) in organ systems of the body. Mastocytosis can be systemic (with or without skin involvement) or cutaneous, and can affect organs including bone marrow, liver, spleen, lymph nodes and mucosal surfaces. Patients with systemic mastocytosis (SM) are susceptible to triggers that could cause activation of abnormal MCs, resulting in multiorgan dysfunction and life-threatening anaphylactic reactions. Mastocytosis has a number of ramifications for the dental management of a patient with the condition. Patients are at increased risk of complications due to a number of risk factors for MC activation present within the dental context, including stress, certain prescribed drugs, oral hygiene products and dental materials. This report presents the oral management of an adult with SM, discussing the implications of the condition within the context of the limited existing literature on the subject. DOI: 10.1136/bcr-2022-249039 PMID: PMC9013988 PMID: 35428668 [Indexed for MEDLINE]

**136. Oral health-related quality of life in patients with Parkinson's disease.** J Oral Rehabil. 2022 Apr;49(4):398-406. doi: 10.1111/joor.13304. Epub 2022 Jan 17. Verhoeff MC(1), Lobbezoo F(1), van Leeuwen AM(1), Schuller AA(2)(3), Koutris M(1). BACKGROUND: Parkinson's disease (PD) is a neurodegenerative condition affecting the quality of life. Due to a worsening of oral health in PD patients with the progression of the disease, oral health-related quality of life (OHRQoL) could be impaired as well. OBJECTIVES: To assess whether PD patients in The Netherlands experience worse OHRQoL than historical controls, and to investigate which factors are associated with OHRQoL in PD patients. MATERIALS & METHODS: In total, 341 PD patients (65.5 ± 8.4 years) and 411 historical controls (62.6 ± 5.3 years) participated. Both groups completed a questionnaire. The PD patients were asked questions regarding demographics, PD, oral health, and OHRQoL. The historical controls filled in demographic information and questions regarding OHRQoL. The latter construct was assessed using the Dutch 14-item version of the Oral Health Impact Profile (OHIP-14). Data were analysed using independent samples t-tests and univariate and multivariate linear regression analysis. RESULTS: The mean OHIP-14 score was higher in PD patients (19.1 ± 6.7) than in historical controls (16.5 ± 4.4) (t(239) = 6.5; p < .001). OHRQoL in PD patients was statistically significant associated with motor aspects of experiences of daily living (B = 0.31; t(315) = 7.03; p < .001), worsening of the oral environment during disease course (B = 3.39; t(315) = 4.21; p < .001), being dentate (B = -5.60; t(315) = -4.5; p < .001), tooth wear (B = 2.25; t(315) = 3.29; p = .001), and possible burning mouth syndrome (B = 5.87; t(315) = 2.87; p = .004). CONCLUSION: PD patients had a lower OHRQoL than historical controls. Besides, PD-related variables and oral health-related variables were associated with OHRQoL. DOI: 10.1111/joor.13304 PMID: PMC9306816 PMID: 35000220 [Indexed for MEDLINE]

**137. Barriers to and Disparities in Access to Health Care Among Adults Aged ≥18 Years with Epilepsy - United States, 2015 and 2017.** MMWR Morb Mortal Wkly Rep. 2022 May 27;71(21):697-702. doi: 10.15585/mmwr.mm7121a1. Tian N(1), Kobau R(1), Zack MM(1), Greenlund KJ(1). Approximately 3 million U.S. adults have active epilepsy (i.e., self-reported doctor-diagnosed history of epilepsy and currently taking epilepsy medication or have had at least one seizure in the past year, or both) (1). One of the most common brain disorders, epilepsy poses a number of challenges for people living with this condition because its treatment can be complex, daily management might be inadequate to achieve seizure control, it limits social participation, and epilepsy is associated with early mortality.† Previous studies indicate that persons with epilepsy are more likely to experience barriers or delays in receipt of certain types of care, including epilepsy specialty care, and that these delays are often associated with individual factors (e.g., seizure type) or social determinants of health (e.g., household income or provider availability) (2-4). To obtain updated estimates of access to health care among U.S. adults aged ≥18 years by epilepsy status, CDC analyzed pooled data from the 2015 and 2017 National Health Interview Survey (NHIS), the most recent years with available epilepsy data. Age-adjusted analyses comparing adults with active epilepsy or inactive epilepsy (i.e., self-reported doctor-diagnosed epilepsy but not currently taking medication for epilepsy and have had no seizure in the past year) with adults without epilepsy indicated that adults with active or inactive epilepsy were more likely to have Medicaid or other public insurance coverage and to report an inability to afford prescription medicine, specialty care, or vision or dental care. Adults with active or inactive epilepsy were more likely to take less medication than prescribed to save money, to be in families having problems paying medical bills, and to report delaying care because of insufficient transportation. Enhancing linkages between clinical and

community programs and services by public health practitioners and epilepsy health and social service providers can address gaps in access to health care. DOI: 10.15585/mmwr.mm7121a1 PMID: PMC9153461 PMID: 35617131 [Indexed for MEDLINE]

- 138. Implant-based Oral Rehabilitation in Systemic Sclerosis Patients: A Systematic Review.** *J Oral Implantol.* 2022 Jun 1;48(3):251-260. doi: 10.1563/aaid-joi-D-20-00384. Dubourg S(1), Huck O(2)(3)(4), Jung S(2)(1)(5). Systemic sclerosis is a rare multisystem autoimmune disorder that significantly impacts the orofacial region. Several oral features including microstomia and increased tooth loss contribute to the mouth-related disability. Prosthetic rehabilitation is very challenging in these patients. As the spectrum of dental implants indications has been recently extended to patients with various systemic disorders, the aim of this systematic review was to evaluate the outcome of dental implants in patients with systemic sclerosis. A literature search was conducted in Medline/PubMed database to identify eligible case reports. Ten publications were included in qualitative synthesis. A total of 71 implants have been reported in 10 patients with systemic sclerosis with a mean of  $7.1 \pm 3.8$  implants per patient. Preimplant surgeries have been described for 3 patients. Implant survival rates were higher than 98%, but the mean follow-up time was only  $28.3 \pm 18.6$  months. Complications have been observed in 3 patients with 1 implant failure and peri-implant bone resorption in 2 patients. Although implant survival rates were high, an individualized assessment of risk-benefit balance is mandatory before indicating implant-based rehabilitation in patients suffering from systemic sclerosis and a scrupulous maintenance program has to be implemented. Further studies are strongly required to establish clinical guidelines. DOI: 10.1563/aaid-joi-D-20-00384 PMID: 33945625 [Indexed for MEDLINE]
- 139. Ectodermal dysplasia: important role of complex dental care in its interdisciplinary management.** *Eur J Paediatr Dent.* 2022 Jun;23(2):140-146. doi: 10.23804/ejpd.2022.23.02.12. Kratochvilova L(1), Dostalova T(1), Schwarz M(1), Macek M Jr(2), Marek I(3), Malíková M(2), Míšová E(3). AIM: Despite the fact that ectodermal dysplasia (ED) is a rare disease, it is often seen in a tertiary clinic. ED affects ectodermal tissues such as skin, hair, teeth, nails, and sweat glands. Patients usually have sparse light hair, deformed nails, and dry skin. They suffer from dental abnormalities such as oligodontia (absence of 6 or more teeth) or complete anodontia; salivation can also be affected. The absence of teeth can be the overriding problem for both patients and their parents, and lead to substantial social ostracisation. This study aims to summarise the facts about the disease, especially dental treatment options based on data drawn from a representative Czech cohort. MATERIALS: The present article summarises the facts about ectodermal dysplasia (ED) in a cohort of 13 patients, where the following were evaluated: clinical manifestations of ED, pathogenic variants detected in selected candidate genes and dental treatment options from child removable dentures to fixed crowns and implants insertion. Three cases are described in detail and demonstrate approaches for different age groups. CONCLUSION: Early diagnosis and active cooperation between the geneticist and dentist will facilitate cooperation with parents and patients and assure secondary prevention. It is preferable that the geneticist understands dental treatment options and can discuss these with patients/parents. DOI: 10.23804/ejpd.2022.23.02.12 PMID: 35722846 [Indexed for MEDLINE]
- 140. Digital Implant Planning in Patients with Ectodermal Dysplasia: Clinical Report.** *Int J Environ Res Public Health.* 2022 Jan 28;19(3):1489. doi: 10.3390/ijerph19031489. Bohner L(1), Vinayahalingam S(2), Kleinheinz J(1), Hanisch M(1). Ectodermal dysplasia may severely affect the development of jaw growth and facial appearance. This case report describes the treatment of two patients suffering from ectodermal dysplasia, both treated with dental implant-fixed restorations by means of computer-guided surgery. Two patients presented to our clinic with congenital malformation of the jaw as a manifestation of ectodermal dysplasia, showing oligodontia and alveolar ridge deficit. Clinical examination revealed multiple unattached teeth and a need for prosthetic therapy. For both cases, dental implants were placed based on a computer-guided planning. A surgical guide was used to determine the positioning of the dental implants according to the prosthetic planning, which allowed for a satisfactory aesthetic and functional outcome. Computer-guided implant placement allowed predictable treatment of complex cases with satisfactory aesthetic and functional results. Adequate surgical and prosthetic planning is considered critical for treatment success. DOI: 10.3390/ijerph19031489 PMID: PMC8835085 PMID: 35162510 [Indexed for MEDLINE]
- 141. Interdisciplinary rehabilitation of a patient with ectodermal dysplasia utilizing digital tools: A clinical report.** *J Prosthet Dent.* 2022 May;127(5):675-679. doi: 10.1016/j.prosdent.2020.11.036. Epub 2021 Jan 14. Gonzaga LH(1), Amorim KP(2), Sesma N(3), Martin WC(4). The present clinical report describes the rehabilitation of a patient diagnosed with ectodermal dysplasia performed by an interdisciplinary team in a comprehensive approach aided by digital technology. The complexity of the treatment was related to predictability regarding timing and the type of approach. The patient was referred for treatment because of congenitally missing and abnormally shaped permanent teeth. The need for an interdisciplinary team involving orthodontic, periodontic, and prosthodontic specialists was identified. A virtual treatment plan was developed to guide tooth movement, placement of dental implants, and tooth preparation for indirect restorations. Therefore, each treatment phase could be communicated to the patient and treatment team in a predictable way. DOI: 10.1016/j.prosdent.2020.11.036 PMID: 33454113 [Indexed for MEDLINE]
- 142. Investigation of temporomandibular disorders in patients with fibromyalgia syndrome: A case-control study.** *J Stomatol Oral Maxillofac Surg.* 2023 Feb;124(1S):101296. doi: 10.1016/j.jormas.2022.09.017. Epub 2022 Sep 21. Sahbaz T(1), Karacay BC(2).

**INTRODUCTION:** The aim of this study is to compare the frequency of temporomandibular disorders and to examine the temporomandibular pain and functionality levels between healthy female participants and female patients diagnosed with fibromyalgia. **MATERIALS AND METHODS:** Our study included 300 participants. Patients were evaluated according to the Diagnostic Criteria for Temporomandibular Disorders: Assessment Instruments (DC/TMD). While evaluating the patients using DC/TMD, TMD Pain Screener and Symptom questionnaire were used within the scope of Axis I, and Graded Chronic Pain Scale, Jaw Functional Limitation Scale-8 (JFLS-8), Patient Health Questionnaire (PHQ-4) and Oral Behaviors Checklist were applied. **RESULTS:** Bruxism, tooth grinding and masseter hypertrophy were found to be significantly higher in fibromyalgia patients compared to healthy volunteers ( $p < 0.001$ ). The pain screener, JFLS-8, PHQ-4 and OBC scores and GCPS levels were found to be increased in the fibromyalgia group compared to healthy individuals ( $p < 0.001$ ). Considering the post-examination diagnoses of the participants, the diagnoses of myalgia ( $p = 0.022$ ) and disc displacement with reduction ( $p < 0.001$ ) were significantly higher than healthy individuals. **CONCLUSIONS:** Fibromyalgia is a common pathology, therefore, TMD symptoms, which are more difficult to diagnose and often missed, should be questioned in fibromyalgia patients and should be kept in mind in the management of fibromyalgia patients. DOI: 10.1016/j.jormas.2022.09.017 PMID: 36152974 [Indexed for MEDLINE]

**143. Association of high cardiovascular risk and diabetes with calcified carotid artery atheromas depicted on panoramic radiographs.** Oral Surg Oral Med Oral Pathol Oral Radiol. 2022 Jan;133(1):88-99. doi: 10.1016/j.oooo.2021.06.006. Epub 2021 Jun 19. Gustafsson N(1), Ahlqvist J(2), Norhammar A(3), Näslund U(4), Rydén L(5), Wester P(6), Levring Jäghagen E(2). **OBJECTIVE:** To evaluate whether estimates of risk of future cardiovascular events and death and established or unknown diabetes are significantly associated with calcified carotid artery atheromas (CCAAs) on panoramic radiographs (PRs). The main focus was on men and women without previous myocardial infarction (MI). **METHODS:** The PAROKRANK (Periodontitis and its Relation to Coronary Artery Disease) study included patients with a first MI and matched control subjects. In this substudy, 738 patients (138 women) and 744 control subjects (144 women) with available PRs were assessed for CCAA. Cardiovascular risk estimates were determined according to the Framingham Risk Score (FRS) and Systematic COronary Risk Evaluation (SCORE). Established and previously unknown diabetes was also determined. **RESULTS:** CCAA was detected on PRs in 206 control subjects (28%) and 251 patients (34%). FRS was significantly associated with CCAA among control subjects ( $P = .04$ ) and patients ( $P = .001$ ). SCORE was associated with CCAA among control subjects ( $P < .01$ ) but not patients ( $P = .07$ ). Among men, FRS and SCORE were associated with CCAA in both control subjects and patients. Diabetes was not significantly associated with CCAA after adjustments. **CONCLUSIONS:** Elevated cardiovascular risk scores were associated with CCAA on PRs among control subjects. Diabetes was not independently associated with CCAA, possibly owing to selection bias. DOI: 10.1016/j.oooo.2021.06.006 PMID: 34305040 [Indexed for MEDLINE]

**144. Facts and controversies regarding oral health in Parkinson's disease: A case-control study in Spanish patients.** Med Oral Patol Oral Cir Bucal. 2022 Sep 1;27(5):e419-e425. doi: 10.4317/medoral.25348. García-De-La-Fuente AM(1), Lafuente-Ibáñez-de-Mendoza I, Lartitegui-Sebastián MJ, Marichalar-Mendia X, Echebarria-Goikouria MÁ, Aguirre-Urizar JM. **BACKGROUND:** Parkinson's disease (PD) is one of the leading neurological disorders, affecting more than 6 million people worldwide. These patients present motor and non-motor symptoms, including oral pathology. The objective of this research is to determine the oral health of patients diagnosed with PD, in order to establish a specific preventive oral health programme. **MATERIAL AND METHODS:** Case-control study on 104 PD and 106 control patients. The pre-designed clinical protocol included a complete oral examination on general aspects, standardised epidemiological index for caries, periodontal disease and edentulism, analysis of oral hygiene, presence of mucous/salivary/functional disorder, and dental treatments. **RESULTS:** A higher number of PD patients consumed daily sweets ( $p < 0.004$ ) and antidepressant drugs ( $p < 0.004$ ). Patients with PD practised less interdental hygiene ( $p < 0.023$ ). The mean plaque index was higher in PD ( $p < 0.003$ ). Drooling ( $p < 0.001$ ), xerostomia ( $p < 0.001$ ), hyposialia ( $p < 0.001$ ), dysphagia ( $p < 0.001$ ), hypogeusia/dysgeusia ( $p < 0.025$ ) and chewing difficulty ( $p < 0.006$ ) were more common in PD. **CONCLUSIONS:** Oral disorders are frequent in PD. A good knowledge of these alterations will allow us design a specific preventive protocol. Some oral alterations may be a sign of diagnostic alert or progression of PD. DOI: 10.4317/medoral.25348 PMID: PMC9445606 PMID: 35368008 [Indexed for MEDLINE]

**145. Relationship Between Periodontitis and Atrial Fibrosis in Atrial Fibrillation: Histological Evaluation of Left Atrial Appendages.** JACC Clin Electrophysiol. 2023 Jan;9(1):43-53. doi: 10.1016/j.jacep.2022.08.018. Epub 2022 Oct 31. Miyauchi S(1), Nishi H(2), Ouhara K(3), Tokuyama T(4), Okubo Y(4), Okamura S(4), Miyamoto S(4), Oguri N(4), Uotani Y(4), Takasaki T(5), Katayama K(5), Furusho H(6), Miyauchi M(6), Takahashi S(5), Hiyama T(7), Nakano Y(8). Comment in JACC Clin Electrophysiol. 2023 Jan;9(1):54-56. **BACKGROUND:** Atrial fibrosis contributes to the onset and persistence of atrial fibrillation (AF) and AF-related stroke. Periodontitis, a common infectious and inflammatory disease, aggravates some systemic diseases. However, the association of periodontitis with AF and with atrial fibrosis has remained unclarified. **OBJECTIVES:** The authors aimed to elucidate the relationship between periodontitis and atrial fibrosis by studying resected left atrial appendages (LAAs). **METHODS:** Seventy-six patients with AF (55 with nonparoxysmal AF, 25 with mitral valve regurgitation, 18 with LAA thrombus) who were scheduled to undergo LAA excision during cardiac surgery were prospectively enrolled. All patients underwent an

oral examination, and the remaining number of teeth, bleeding on probing, periodontal probing depth, and periodontal inflamed surface area (PISA) were evaluated as parameters of periodontitis. The degree of fibrosis in each LAA was quantified by Azan-Mallory staining. RESULTS: Bleeding on probing ( $R = 0.48$ ;  $P < 0.0001$ ), periodontal probing depth of  $\geq 4$  mm ( $R = 0.26$ ;  $P = 0.02$ ), and PISA ( $R = 0.46$ ;  $P < 0.0001$ ) were positively correlated with atrial fibrosis. Among patients with  $>10$  remaining teeth, PISA was positively and strongly correlated with atrial fibrosis ( $R = 0.57$ ;  $P < 0.0001$ ). After adjustments for age, AF duration, BMI, mitral valve regurgitation, and CHADS<sub>2</sub> (congestive heart failure, hypertension, age, diabetes, previous stroke/transient ischemic attack) score, PISA was significantly associated with atrial fibrosis ( $\beta = 0.016$ ;  $P = 0.0002$ ). CONCLUSIONS: The authors histologically revealed the association of periodontitis with atrial fibrosis. This indicates that periodontitis, which is modifiable, is likely a risk factor for AF. DOI: 10.1016/j.jacep.2022.08.018 PMID: 36697200 [Indexed for MEDLINE]

**146. Internal structure and validity of the bedside oral examination tool in patients with brain injury at neurorehabilitation setting.** J Oral Rehabil. 2022 Mar;49(3):344-352. doi: 10.1111/joor.13285. Epub 2021 Nov 28. Kothari SF(1)(2), Nascimento GG(3), De Caxias FP(4), Jakobsen MB(1), Nielsen JF(1), Kothari M(1)(5). OBJECTIVES: To assess the internal structure and validity of the 'bedside oral examination' (BOE) instrument in individuals with acquired brain injury (ABI). METHODS: Ninety ABI individuals were examined using BOE in their first week of neurorehabilitation. BOE measures oral health within eight categories including: swallow, tongue, odour, teeth, lips, saliva, mucosa and gingiva. To assess the validity of BOE, full-mouth clinical examination (gold standard) was performed. The internal structure of BOE was assessed using exploratory and confirmatory factor analyses. To measure the validity, the BOE scores were dichotomised into excellent oral health and altered oral health. Sensitivity, specificity and area under the receiver operating characteristic (ROC) curve of the six/eight BOE items were compared with their related clinical oral examination tool. RESULTS: Overall, the patients had poor oral health irrespective of the oral examination tool used. Factor analyses indicated two factors within BOE: 'oral hygiene' (teeth, gingiva and mucosa) and 'orofacial health' (lips, swallow and saliva). BOE tongue and odour items loaded in neither factor. BOE items showed low validity since the highest area under the ROC curve was 0.60. Findings on the sensitivity value ranged from 35.0 to 74.2, while specificity from 44.4 to 83.3, depending on the item evaluated. CONCLUSION: Bedside oral examination does not seem to be an ideal 'single' outcome tool in a neurorehabilitation setting as it lacks validity. BOE evaluates oral health as two independent but correlated components and treat them separately indicating precision treatment depending on their oral health dysfunction. It is advisable to use BOE as a screening tool. However, it should be complimented by proper clinical examination before establishing a treatment plan for oral health in patients with ABI DOI: 10.1111/joor.13285 PMID: 34817886 [Indexed for MEDLINE]

**147. Satisfaction with resilient denture liner versus acrylic resin telescopic prostheses for patients with ectodermal dysplasia: A nonrandomized crossover clinical trial.** J Prosthet Dent. 2022 Oct;128(4):656-663. doi: 10.1016/j.prosdent.2020.09.049. Epub 2021 Mar 3. Mohsen YH(1), Kader MA(2), Abdel Nabi N(3), Radi IAW(4). STATEMENT OF PROBLEM: Patients with ectodermal dysplasia are characterized by anodontia or oligodontia. How their challenging prosthodontic rehabilitation might be optimized is unclear. PURPOSE: The purpose of this crossover study was to evaluate the effect of resilient denture liner versus acrylic resin copings in complete overdentures for patients with ectodermal dysplasia. Outcome measures included patient satisfaction, retention, and periodontal health of the abutment tooth. MATERIAL AND METHODS: Ten partially edentulous participants diagnosed with ectodermal dysplasia were recruited from the Faculty of Dentistry, Cairo University, Egypt, and enrolled in this crossover clinical trial. All participants received acrylic resin coping-retained maxillary complete overdentures (group N, stage 1). The acrylic resin copings were then replaced by a resilient denture liner (group S, stage 2). Patient satisfaction, retention, and periodontal health parameters were evaluated 1 week and 3 months after the completion of each stage. Patient satisfaction was assessed with a validated, reliable questionnaire. The results of the periodontal probing depths were tested with repeated measures ANOVA followed by the Bonferroni correction for pairwise comparisons. Tooth mobility, patient satisfaction, retention, and gingival index were tested by using the Wilcoxon signed ranked test. Ordinal data as the sixth and seventh domains of patient satisfaction were tested by using the McNemar test for paired comparisons ( $\alpha = .05$ ). RESULTS: Three months after overdenture delivery, a statistically significant difference was found between the groups regarding retention ( $P = .025$ ), probing depth ( $P < .001$ ), and gingival index ( $P = .011$ ) favoring the acrylic resin coping-retained overdentures. Results of tooth mobility ( $P = .035$ ), overall attitude ( $P = .041$ ), ease of eating ( $P = .023$ ), denture comfort ( $P = .024$ ), and degree of teasing ( $P = .038$ ) on wearing the denture showed a statistically significant difference between the groups, favoring the resilient denture liner. CONCLUSIONS: In children with oligodontia and ectodermal dysplasia, the resilient denture liner-retained maxillary complete overdenture enhanced patient satisfaction and tooth mobility of anterior teeth, while minimally jeopardizing the periodontal condition of the abutment teeth. DOI: 10.1016/j.prosdent.2020.09.049 PMID: 33674122 [Indexed for MEDLINE]

**148. A tactile graphic book with Braille and audio use improved plaque score and toothbrushing performance in visually impaired individuals.** Spec Care Dentist. 2022 Sep;42(5):456-463. doi: 10.1111/scd.12696. Epub 2022 Jan 22. PinKwan P(1), Woranun P(1), Praphasri R(1). OBJECTIVE: To evaluate the effectiveness of embossed tactile graphic books and Braille with an audio file for oral health education for visually impaired individuals. MATERIALS AND METHODS: Forty visually impaired individuals (9-16

years old) were matched and randomly assigned into two groups. The education was provided using an audio file and practicing toothbrushing with teachers' hands-on assistance for the audio/hands-on (A/HO) group and the tactile graphic book with audio and teacher supervision (ATB/TS) group. The oral health instruction was performed three times, once a week every 2 weeks, transitioning to a self-study session based on the group's method once a week for 4 weeks. Plaque score, brushing performance, and oral health knowledge were evaluated. Statistical analysis was performed using the Mann-Whitney U and Friedman post hoc test. RESULTS: A significant improvement was found in both groups at week 6 of the intervention. However, the ATB/TS group had a significantly higher score than the A/HO group in the task analysis of tooth brushing step score (p-value < 0.001), PHP score (p-value = 0.001), and oral hygiene knowledge score (p-value < 0.001). CONCLUSION: Tactile graphic books and Braille with an audio file is an effective medium for the oral health education of visually impaired individuals. DOI: 10.1111/scd.12696 PMID: 35064689 [Indexed for MEDLINE]

**149. Treatment Plan and Challenges in Full-Mouth Rehabilitation of a Quadriplegic Patient: A Clinical Report.** J Prosthodont. 2022 Mar;31(3):183-189. doi: 10.1111/jopr.13461. Epub 2021 Dec 28. Auerbacher M(1), Kakoschke TK(2), Hickel R(1), Kaisarly D(1)(3). 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 DOI: 10.1111/jopr.13461 PMID: 34859932 [Indexed for MEDLINE]

**150. Parkinson's disease, temporomandibular disorder pain and bruxism and its clinical consequences: a protocol of a single-centre observational outpatient study.** BMJ Open. 2022 Apr 18;12(4):e052329. doi: 10.1136/bmjopen-2021-052329. Verhoeff MC(1), Koutris M(2), Berendse HW(3), van Dijk KD(4), Lobbezoo F(2). INTRODUCTION: A recent questionnaire-based study suggested that bruxism and painful temporomandibular disorders (TMD pain) may be more prevalent in patients with Parkinson's disease (PD) compared with controls. The presence of both bruxism and TMD pain may negatively influence patients' quality of life. The present study is designed to clinically and more objectively investigate the presence of bruxism and TMD pain in patients with PD. The secondary aim of the study is to identify factors associated with bruxism and TMD pain in patients with PD, such as disease severity and dopaminergic medication usage. Furthermore, the presence of tooth wear in patients with PD will be studied as this can be a major consequence of bruxism. Finally, deviations in saliva composition that may contribute to tooth wear will be studied. METHODS AND ANALYSIS: This is a single-centre observational outpatient study at the Amsterdam University Medical Centres, location VUmc. All patients with a clinical diagnosis of PD will be eligible for inclusion. Participants will fill in a set of questionnaires. Subsequently, patients will be examined clinically for, among others, TMD pain, presence and severity of tooth wear, and deviations in saliva composition. Sleep-time registrations will take place for 5 nights with the GrindCare GC4 (ie, a portable, single-channel electromyographic recorder) to assess sleep bruxism and simultaneously by the use of the BruxApp for 5 days to assess awake bruxism. We will partly use data collected during standard clinical care to minimise patient burden. ETHICS AND DISSEMINATION: The scientific and ethical aspects of this study protocol have been approved by the Medical Ethics Review Committee of the Amsterdam UMC, location VUmc; NL. 2019.143. Informed consent will be obtained from all participants. The results will be published in a peer-reviewed journal, if relevant presented at conferences, and published as part of a PhD thesis. TRIAL REGISTRATION NUMBER: NL8307. DOI: 10.1136/bmjopen-2021-052329 PMCID: PMC9016408 PMID: 35437243 [Indexed for MEDLINE]

**151. The relationship between diabetes and carotid artery calcifications detected via dental cone-beam computed tomography in patients undergoing implant treatment planning.** J Am Dent Assoc. 2022 Sep;153(9):878-883. doi: 10.1016/j.adaj.2022.05.005. Epub 2022 Jun 25. Madern AL, Anderson NK, Colosi D, Mahdian M. BACKGROUND: The authors investigated the association between carotid artery calcifications (CACs) detected incidentally on dental cone-beam computed tomographic scans and positive diabetes status. METHODS: Two patient groups were identified retrospectively from a patient database: positive for CACs based on cone-beam computed tomographic scans and positive diabetes status. In addition to demographic characteristics, data including diabetes status and presence, type, and absence of CACs were obtained. A  $\chi^2$  statistical analysis was completed by means of dividing the data into sets of known CAC and known history of diabetes; significance level was  $P <$

.05. RESULTS: To satisfy the a priori power analysis, records from 2010 through 2021 were used. For the positive CAC group, data were obtained from 288 patients (171 men, 117 women) and 68 patients (24%) had a positive diabetes status at the time of cone-beam computed tomography ( $P < .001$ ). There were significantly more male patients ( $n = 47$ ) than female patients ( $n = 21$ ) with diabetes ( $\chi^2 = 9.9$ ;  $P = .002$ ). For the positive diabetes group, data were obtained from 225 patients (149 men, 76 women), and 100 patients (44%) had an identifiable CAC. There were significantly more male patients ( $n = 73$ ) than female patients ( $n = 27$ ) with CAC ( $\chi^2 = 21.2$ ;  $P < .001$ ). CONCLUSIONS: There was a significant relationship to diabetes for patients with CACs, indicating potential undiagnosed diabetes. Male patients with diabetes are significantly more at risk of developing CACs. PRACTICAL IMPLICATIONS: People with CAC may be at risk of having undiagnosed diabetes and require heightened awareness during implant treatment planning. DOI: 10.1016/j.adaj.2022.05.005 PMID: 35760601 [Indexed for MEDLINE]

**152. Management of internal and external root resorption in primary teeth of a 3-year-old with myelomeningocele: A case report.** Spec Care Dentist. 2022 Sep;42(5):541-547. doi: 10.1111/scd.12706. Epub 2022 Feb 24. Talekar AL(1), Silotry TMH(1), Chaudhari GS(1), Chunawala YK(1). BACKGROUND: Myelomeningocele (MMC) is a severe manifestation of spina bifida. Children with MMC have motor disability, hydrocephalus, skeletal abnormalities, and mental retardation. These individuals are more susceptible to caries due to poor oral hygiene, carbohydrate-rich diet, prolonged use of sugar-containing medications and limited motor abilities. Latex allergy is an important factor to be considered during the dental rehabilitation of such patients. CASE REPORT: A 3-year-old girl visited the dental clinic with the chief complaint of multiple carious teeth and H/o neural tube defect (NTD) which had been operated on at the age of 6 weeks. On dental examination, multiple dental abscesses and severe early childhood caries were noted. Radiographic evaluation revealed internal root resorption of tooth "K" and external root resorption of tooth "T." The two teeth were treated with ledermix paste followed by obturation with Vitapex® (Diadent Group International Inc., Burnaby, BC, Canada) along with triple antibiotic paste and placement of stainless steel crown (SSC). A latex-free environment was maintained during the entire treatment to prevent allergic reaction. A follow up after 42 months indicated clinical and radiographical success. CONCLUSION: The paper reports successful management of internal and external root resorption as well as latex allergy in a dental operator. The dental perspective while dealing with patients having NTD is limited. Explaining the particulars of the treatment plan will aid in management of such cases. DOI: 10.1111/scd.12706 PMID: 35201631 [Indexed for MEDLINE]

**153. Mothers view about oral health status, oral hygiene behaviors, and dental services utilization of their children with hearing impairment attending special schools.** Spec Care Dentist. 2022 Mar;42(2):149-154. doi: 10.1111/scd.12648. Epub 2021 Sep 25. Rajabloo S(1), Pakkhesal M(2), Naghavi Alhosseini A(3), Ghorbani Z(4), Rajabi A(5). AIM: Parents are the principal decision-makers regarding their child's health. Awareness of mothers' view about their children's health, particularly with special health care needs (SHCN) (include hearing impaired children), is essential for health care providers. Therefore, the present study aimed to assess the mothers view about oral health status, oral hygiene practices, and dental services utilization of their children with hearing impairment attending special schools. METHODS: A cross-sectional study was conducted between May and September 2020 among mothers of students with hearing impairment attending special schools. Also, the telephone structured interview was used to gathering mothers view. RESULTS: 57.4% of the mothers rated their children's oral health status as excellent or good, 27.9% as moderate, and 14.7% as poor. About half of the mothers (49.2%) stated that their children used toothbrushes once daily, and 15% use dental floss. Also, 54% of the children visited the dentist before this survey's conduct. CONCLUSION: The findings of the present study suggest that children with hearing impairment can also have good oral health status and behaviors. These results may be attributed to the fact that the study sample was taken from two special schools. Also, only the mothers' perception assessment of students' oral health status was done. Further studies are required to increase the strength of evidence. DOI: 10.1111/scd.12648 PMID: 34561867 [Indexed for MEDLINE]

**154. Oral health-related quality of life is more strongly correlated with mental health than with oral health in relapsing-remitting multiple sclerosis.** J Oral Rehabil. 2023 Jan;50(1):62-68. doi: 10.1111/joor.13387. Epub 2022 Nov 7. Nangle MR(1), Manchery N(1), Swayne A(2)(3), Boocock H(4), Blum S(2)(3), Henry JD(5). BACKGROUND: Multiple sclerosis (MS) is a leading cause of neurological disability in young and middle-aged populations, associated with substantial burden of illness. Because a growing literature now shows that this burden extends to poorer oral health, oral health-related quality of life (OHRQoL) may be reduced as well. OBJECTIVES: To test whether people with relapsing-remitting MS (RRMS) have poorer OHRQoL than demographically matched controls, and to establish which variables are associated with worse OHRQoL. MATERIALS AND METHODS: In total, 64 people with RRMS and 69 demographically matched controls participated. Both groups completed the Oral Health Impact Profile (OHIP-14), a validated measure of OHRQoL, as well as an objective oral health examination performed by a qualified dentist, a measure of dental-related functionality and a measure of mental health. RESULTS: OHRQoL was significantly poorer in the RRMS relative to the control group. However, although poorer OHRQoL in the RRMS group was moderately associated with objectively assessed oral health ( $r = .30$ ), it was more strongly associated with mental health ( $r = .61$ ). For the control group, the reverse pattern of association was evident, with OHRQoL more strongly associated with oral health ( $r = .48$ ) relative to mental health ( $r = .20$ ). CONCLUSION: People with RRMS report poorer OHRQoL than demographically

matched controls, but these appraisals are more strongly linked to mental health than to objective oral health indicators. DOI: 10.1111/joor.13387 PMID: PMC10100121 PMID: 36301199 [Indexed for MEDLINE]

- 155. Effectiveness of intravenous sedation for oral surgery in a patient with multiple sclerosis and a past history of posterior reversible encephalopathy syndrome: A case report.** *Spec Care Dentist.* 2022 Nov;42(6):638-641. doi: 10.1111/scd.12717. Epub 2022 Mar 31. Hase Y(1), Kamekura N(1), Fujisawa T(1). INTRODUCTION: Posterior reversible encephalopathy syndrome (PRES) is a relatively new syndrome comprising headache, altered mentation, and seizures, associated with neuroimaging findings characteristic of subcortical edema in the posterior regions. As previous studies have reported perioperative development and recurrence of PRES, a cautious anesthetic management of the syndrome is required. CASE REPORT: We describe the anesthetic management for oral surgery in a patient with multiple sclerosis and a history of PRES, both of which are risk factors of recurrent PRES. Although we faced a dilemma regarding the management method of anesthesia, we finally performed intravenous sedation for the surgery without any complications. CONCLUSION: Appropriate preoperative evaluation and anesthetic management are important to maintain hemodynamics and avoid recurrence of PRES. DOI: 10.1111/scd.12717 PMID: 35358340 [Indexed for MEDLINE]
- 156. Long-term dental outcomes in patients with fibrodysplasia ossificans progressiva: a report of three cases of tooth extraction.** *Quintessence Int.* 2022 Aug 17;53(8):712-720. doi: 10.3290/j.qi.b3094989. Fujihara Y, Mori Y, Saijo H, Abe T, Susami T, Haga N, Hoshi K. Fibrodysplasia ossificans progressiva (FOP) is an extremely rare autosomal dominant disorder characterized by congenital skeletal malformation and progressive heterotopic ossification. In the oral and maxillofacial region, deformity of the temporomandibular joint is a common feature of FOP, as well as restricted mouth opening derived from heterotopic ossification in the masticatory muscles. Since surgical procedures are generally not recommended because of the risk of flare-ups and increased heterotopic ossification, reports of tooth extractions and their outcomes in patients with FOP are limited. The present article reports the long-term oral outcomes of three Japanese patients with FOP, in whom the teeth were deliberately extracted to avoid the risk of oral inflammation causing further heterotopic ossification. The extractions were conducted under local or general anesthesia, and healing of sockets was nonproblematic with the formation of new bone. Undesirable events, including progression of heterotopic ossification in the oral and maxillofacial region and further restriction of mouth opening, were not apparent. The extractions also alleviated the existing inflammation, contributing to maintaining their oral hygiene. These cases suggest that deliberate planning and judicious surgery could induce favorable healing after tooth extractions in patients with FOP, leading to long-term stability of their oral health status. DOI: 10.3290/j.qi.b3094989 PMID: 35674162 [Indexed for MEDLINE]
- 157. A rare case of multiple brain abscesses caused by apical periodontitis of deciduous teeth in congenital heart disease: a case report.** *BMC Oral Health.* 2022 Jun 28;22(1):261. doi: 10.1186/s12903-022-02294-z. Takahashi S(#)(1), Segoe H(#)(2), Kikuri T(3), Maruo Y(2), Sato T(2), Watanabe Y(4), Jimei Z(1), Yoshimura Y(5), Ishiyama M(6), Takeda A(7), Yawaka Y(1), Shirakawa T(6). BACKGROUND: A brain abscess is a focal infection in which abscesses form in the brain. A brain abscess is a rare but fatal disease when rupture occurs into the ventricles. We report a case of multiple brain abscesses caused by a hematogenous infection from the apical periodontitis of deciduous teeth. CASE PRESENTATION: The patient was a 7-years and 8-months-old male with congenital heart disease. The patient sought medical attention due to fever and headache, for which he was started on three antibiotics with a diagnosis of multiple brain abscesses. Given that apical periodontitis of deciduous teeth was strongly suspected as the source of the brain abscess, the deciduous teeth were extracted. Immediately after deciduous teeth extraction, the patient's headache and neurological symptoms disappeared. CONCLUSIONS: After teeth extraction, a clear shrinkage of the brain abscess was observed, and the patient was discharged from the hospital. DOI: 10.1186/s12903-022-02294-z PMID: PMC9241206 PMID: 35765049 [Indexed for MEDLINE]
- 158. Recording jaw relation of a pediatric patient with ectodermal dysplasia and complete anodontia using a digital mini arch tracer: A case report.** *J Prosthodont.* 2022 Dec;31(9):738-743. doi: 10.1111/jopr.13587. Epub 2022 Aug 25. Sun M(1), Tan X(1), Zhang N(2), Lou Y(2), Wu Q(1), Yu H(1). Children with ectodermal dysplasia and complete anodontia experience difficulties in oral rehabilitation because of the small arch size. A case of a 7-year-old boy, whose arch size (length and width) was 30-40% smaller than that of a male adult and who presented with difficulties in jaw relation recording using commercially available devices is described. A digital workflow involving a mini arch tracer was introduced. Primary impressions were made using three-dimensionally (3D) printed mini trays produced based on the patient's computed tomography images, and digital primary casts were obtained based on the scanned and reversed primary impressions. The final custom impression trays with mini tracing plates were designed based on the primary casts. In addition, the hand shank, retention plate, and retainers were placed on the designed custom trays and 3D-printed to produce an individual arch tracer system. In addition, two height-checking buckles were designed to help adjust the height of a tracing screw. Finally, the jaw relation of the patient was recorded and transferred, and a set of complete dentures were delivered, satisfying both the patient and his family. DOI: 10.1111/jopr.13587 PMID: 35946867 [Indexed for MEDLINE]

## Cleft lip/palate

- 159. Association between oral clefts and periodontal clinical measures: A meta-analysis.** *Int J Paediatr Dent.* 2022 Jul;32(4):558-575. doi: 10.1111/ipd.12934. Epub 2022 Feb 6. Marzouk T(1)(2), Youssef M(1), Tsigarida A(3), McKinney C(4), Wong C(2), DeLucia L(2), Shah R(2), Wang H(5), Malmstrom H(1), Shope E(2)(6). AIM: To conduct a systematic review and to evaluate the clinical parameters for periodontal diseases in individuals with cleft lip and/or palate (CL/P). DESIGN: The authors searched six indexed databases without any linguistic limitation through July 2021. The eligibility criteria were observational studies that compared the periodontal clinical measures of individuals with CL/P to those without CL/P. A meta-analysis was conducted using random-effects models with inverse variance weighting. RESULTS: The literature search generated 1277 records, and 40 full-text articles were reviewed. Twenty-three studies comprising 3235 individuals from four continents fulfilled our selection criteria. The meta-analysis revealed a significant difference in mean plaque index scores (MD = 0.31, 95% CI = 0.22, 0.41), gingival index scores (MD = 0.50, 95% CI = 0.24, 0.77), and periodontal pocket depth (MD = 0.64, 95% CI = 0.12, 1.16) between individuals with and without CL/P. A slight increase in clinical attachment loss was detected among individuals with CL/P; however, such an increase may have little clinical significance. CONCLUSIONS: As age is positively related to periodontal disease progression, and individuals with CL/P are more likely to present with more plaque accumulation and gingival inflammation, clinicians should reinforce preventive dental care from an early age. DOI: 10.1111/ipd.12934 PMID: 34626516 [Indexed for MEDLINE]
- 160. Speech Development in Cleft Palate with and without Robin Sequence.** *Plast Reconstr Surg.* 2022 Feb 1;149(2):443-452. doi: 10.1097/PRS.00000000000008730. Naros A(1), Bartel S(1), Bacher M(1), Koos B(1), Blumenstock G(1), Wiechers C(1), Poets CF(1), Reinert S(1), Krimmel M(1). BACKGROUND: Robin sequence is defined as the triad of micrognathia, glossoptosis, and upper airway obstruction. In up to 85 percent, it is associated with cleft palate. Many studies have reported worse speech development in Robin sequence children after cleft palate repair. The authors investigated speech development in isolated Robin sequence with cleft palate versus children with cleft palate only at the age of 5 to 6 years. METHODS: All Robin sequence children were treated with the Tübingen palatal plate after birth. Data were collected using the German version of the Great Ormond Street Speech Assessment. Audio and video recordings were reviewed and analyzed separately by two blinded senior phoniatricians based on the German version of the Universal Reporting Parameters for Cleft Palate Speech, and scored to enable comparability of speech outcomes. RESULTS: Forty-four children (Robin sequence, n = 22; cleft palate only, n = 22) were included. Robin sequence children were significantly older at surgery (11.8 months versus 7.1 months;  $p < 0.001$ ) but younger at study (70.5 months versus 75.2 months;  $p = 0.035$ ). They also had more severe cleft of the palate ( $p = 0.006$ ). All children studied showed good to very good speech development without serious impairment. None of the reported parameters on the German version of the Universal Reporting Parameters for Cleft Palate Speech showed significant group differences; the median total score in the Robin sequence group was 23 (interquartile range, 16.5 to 27.5) versus 19 (interquartile range, 17 to 23) in the cleft palate-only group. Statistical analysis revealed no significant effect of group ( $Z = -1.47$ ;  $p = 0.14$ ). CONCLUSIONS: No group differences in speech development were found at age 5 to 6 years. Isolated Robin sequence does not necessarily represent a risk for impaired speech development. CLINICAL QUESTION/LEVEL OF EVIDENCE: Risk, II. DOI: 10.1097/PRS.00000000000008730 PMID: 34898524 [Indexed for MEDLINE]
- 161. Midface Growth Potential in Unoperated Clefts: A Systematic Review and Meta-Analysis.** *J Craniofac Surg.* 2022 May 1;33(3):774-778. doi: 10.1097/SCS.00000000000008296. Epub 2021 Oct 21. Wlodarczyk JR(1)(2), Munabi NCO(1)(2), Wolfswinkel E(1)(2), Nagengast E(1)(2), Higuch EC(3), Turk M(1)(2), Urata MM(1)(2)(4), Hammoudeh JA(1)(2)(4), Yao C(5), Magee W 3rd(1)(2)(5)(4). Competing hypotheses for the development of midface hypoplasia in patients with cleft lip and palate include both theories of an intrinsic restricted growth potential of the midface and extrinsic surgical disruption of maxillary growth centers and scar growth restriction secondary to palatoplasty. The following meta-analysis aims to better understand the intrinsic growth potential of the midface in a patient with cleft lip and palate unaffected by surgical correction. A systematic review of studies reporting cephalometric measurements in patients with unoperated and operated unilateral cleft lip and palate (UCLP), bilateral cleft lip and palate (BCLP), and isolated cleft palate (ICP) abstracted SNA and ANB angles, age at cephalometric analysis, syndromic diagnosis, and patient demographics. Age and Region-matched controls without cleft palate were used for comparison. SNA angle for unoperated UCLP ( $84.5 \pm 4.0^\circ$ ), BCLP ( $85.3 \pm 2.8^\circ$ ), and ICP ( $79.2 \pm 4.2^\circ$ ) were statistically different than controls ( $82.4 \pm 3.5^\circ$ ), (all  $P \leq 0.001$ ). SNA angles for operated UCLP ( $76.2 \pm 4.2^\circ$ ), BCLP ( $79.8 \pm 3.6^\circ$ ), and ICP ( $79.0 \pm 4.3^\circ$ ) groups were statistically smaller than controls (all  $P \leq 0.001$ ). SNA angle in unoperated ICP (n=143) was equivalent to operated ICP patients ( $79.2 \pm 4.2^\circ$  versus  $79.0 \pm 4.3^\circ$   $P = 0.78$ ). No unoperated group mean SNA met criteria for midface hypoplasia (SNA < 80). Unoperated UCLP/BCLP exhibit a more robust growth potential of the maxilla, whereas operated patients demonstrate stunted growth compared to normal phenotype. Unoperated ICP demonstrates restricted growth in both operated and unoperated patients. As such, patients with UCLP/BCLP differ from patients with ICP and the factors affecting midface growth may differ. Level of Evidence: IV. DOI: 10.1097/SCS.00000000000008296 PMID: 34690318 [Indexed for MEDLINE]

**162. On the Benefits of Speech-Language Therapy for Individuals Born With Cleft Palate: A Systematic Review and Meta-Analysis of Individual Participant Data.** J Speech Lang Hear Res. 2022 Feb 9;65(2):555-573. doi: 10.1044/2021\_JSLHR-21-00367. Epub 2022 Jan 6. Sand A(1), Hagberg E(1)(2), Lohmander A(1)(2). PURPOSE: Cleft lip and/or palate (CLP) is a common birth defect, and after reconstructive surgery, about 50% of children at 5 years of age have speech deviations and are referred to speech-language therapy (SLT). The peer-reviewed evidence for the benefit of SLT has been uncertain. Our objective was to systematically review and meta-analytically summarize the benefit of SLT for individuals born with CLP. METHOD: A systematic search was conducted (last search on February 19, 2021) on studies evaluating SLT with pre and post measures on speech production, language ability, intelligibility, and/or patient-reported outcomes. We sought individual participant data (IPD) and evaluated on an individual level if the outcome measure had improved to a clinically relevant degree during SLT and if the outcome measure was on a level with peers or not after SLT. Meta-analyses and meta-regressions were applied to synthesize IPD across studies. RESULTS: Thirty-four eligible studies were found. Nineteen studies provided IPD (n = 343) for the main analysis on speech production. The synthesized information suggests that, during SLT, speech production improved to a clinically relevant degree for many individuals (95% CI [61%, 87%]) and that speech production was on a level with peers for some individuals after SLT (95% CI [10%, 34%]). CONCLUSIONS: The main strength of this meta-analysis is that we evaluated on an individual level pre- and post-intervention data based on considerations of clinical relevance. This approach allowed us to conclude that many individuals benefit from SLT and that further work on evaluating SLT in this patient group is meaningful. Supplemental Material <https://doi.org/10.23641/asha.17700992>. DOI: 10.1044/2021\_JSLHR-21-00367 PMID: 34990556 [Indexed for MEDLINE]

**163. A Systematic Review of Mandibular Distraction Osteogenesis Versus Orthodontic Airway Plate for Airway Obstruction Treatment in Pierre Robin Sequence.** Cleft Palate Craniofac J. 2022 Mar;59(3):365-376. doi: 10.1177/10556656211011886. Epub 2021 Jun 2. Abbas DB(1), Lavin C(1), Fahy EJ(1), Choo H(2), Truong MT(3), Bruckman KC(2), Khosla RK(2), Lorenz HP(1), Momeni A(1), Wan DC(1). OBJECTIVE: Mandibular distraction osteogenesis (MDO) is frequently performed to address airway obstruction in patients with Pierre Robin sequence (PRS), though more recently the technique of orthodontic airway plating (OAP) has gained traction. We aimed to evaluate OAP compared to MDO for airway obstruction in PRS. DESIGN: A systematic literature search across PubMed, Embase, and Google Scholar identified all studies published in English, which involved MDO or any form of OAP as treatments for PRS. All relevant articles were reviewed in detail and reported on, adhering to PRISMA guidelines. MAIN OUTCOME MEASURES: Airway (tracheostomy avoidance, decannulation rate), feeding (full oral feeding tolerance). RESULTS: Literature search identified 970 articles, of which 42 MDO studies and 9 OAP studies met criteria for review. A total of 1159 individuals were treated with MDO, and 322 individuals were treated with OAP. Primary outcomes appear similar for MDO and OAP at face value; however, this must be interpreted with different pretreatment contexts in mind. CONCLUSIONS: Orthodontic airway plating may be considered for airway obstruction in PRS, as some airway-related and feeding-related outcomes appear similar with MDO, per existing evidence in the literature. However, since PRS severity differed between studies, OAP cannot be uniformly considered a replacement for MDO. Further research is required to more comprehensively assess these treatment modalities inclusive of metrics that allow for direct comparison. DOI: 10.1177/10556656211011886 PMID: 34075816 [Indexed for MEDLINE]

**164. Facial Nerve Dysfunction After Mandibular Distraction Osteogenesis in Patients with Robin Sequence: A Systematic Review and Meta-Analysis.** Cleft Palate Craniofac J. 2023 Apr;60(4):395-404. doi: 10.1177/10556656211070728. Epub 2022 Jan 10. Kapoor E(1), Mantilla-Rivas E(1), Rana MS(2), Aivaz M(1), Duarte-Bateman D(1), Escandón JM(1), Crowder HR(1), Manrique M(1), Rogers GF(1), Oh AK(1). OBJECTIVE: Robin Sequence (RS), characterized by micrognathia, glossoptosis, and upper airway obstruction, is an increasingly recognized diagnosis. An effective surgical intervention is mandibular distraction osteogenesis (MDO). This study analyzes published evidence regarding facial nerve dysfunction (FND) associated with MDO. DESIGN AND SETTING: According to PRISMA guidelines, a systematic review was carried out with databases queried in June 2019 using MESH terms, or equivalent terms, as follows: "distraction osteogenesis" and "Robin Sequence". A review of original Spanish and English articles, were included. Outcome measures included the prevalence of FND; the affected branches; the rate of permanent vs. transient FND; the use of an internal vs. external device; the daily distraction rate; and finally, the overall distraction length. Subsequently, a meta-analysis was conducted to collate results regarding the prevalence of FND and the factors associated with it. RESULTS: Of 239 unique studies identified, 19 studies with 729 patients met inclusion criteria; 52 patients developed FND after MDO. A random-effects meta-analysis yielded a pooled prevalence of FND of 6.40%, with moderately heterogeneous studies ( $I^2 = 41\%$ ,  $\tau^2 = 0.006$ ). Marginal mandibular nerve involvement was most commonly noted. Nine studies reported transient FND, six permanent, one both, and two unspecified. Internal distractors were used in 8 studies and external in 3 and both in 2. Distraction rate was 1.00 to 2.00 mm/day and total distraction length ranged from 13.00 to 22.3 mm. Sample size was the only parameter inversely associated with rate of FND ( $p = 0.04$ ). CONCLUSION: This analysis of FND associated with MDO for patients with RS demonstrates a lack of consistent documentation. MDO-associated FND does not

appear to be uncommon, and permanent dysfunction can occur. This review underscores the importance of thorough documentation to elucidate the mechanism of FND. DOI: 10.1177/10556656211070728 PMID: 35001639 [Indexed for MEDLINE]

**165. Psychological and Peer Difficulties of Children with Cleft Lip and/or Palate: A Systematic Review and Meta-Analysis.** Cleft Palate Craniofac J. 2022 Sep 9;10556656221125377. doi: 10.1177/10556656221125377. Online ahead of print. Branson EK(1)(2), Branson VM(3), McGrath R(1), Rausa VC(2), Kilpatrick N(2)(4)(5), Crowe LM(2)(6)(7). OBJECTIVES: A systematic review and meta-analysis were conducted to determine if children born with cleft lip and/or palate are at increased risk of psychological and peer difficulties, and if so, which difficulties they develop. METHODS: EMBASE, MEDLINE, and PsycINFO were searched for English language studies published between January 2005 and January 2022 which investigated the psychological outcomes and peer function of children with nonsyndromic cleft lip and palate. Outcomes included internalizing problems, such as anxiety and depression, externalizing problems, such as hyperactivity, conduct disorders, self-concept including self-image and self-esteem, peer problems, resilience, coping, and overall psychological function. A risk of bias assessment was performed using the Newcastle-Ottawa Scale. Random effects models were used in the meta-analysis to compare the outcomes for children born with a cleft and those without. RESULTS: In total 41 studies met inclusion criteria, with 9 included in the meta-analysis. Children born with a cleft appear to have similar psychological outcomes compared to normative controls when using the strengths and difficulties questionnaire. There are some minor differences between self-report and parent report, with parents generally reporting that their child with a cleft has increased emotional, conduct, and hyperactivity problems. The small differences between the study cohort and control cohorts are unlikely to imply any differences on a clinical level. CONCLUSIONS: Overall psychological outcomes appear to be similar between children born with a cleft and the nonaffected population, however, some symptoms such as anxiety and depression appear higher in children with cleft lip and/or palate. DOI: 10.1177/10556656221125377 PMID: 36082954

**166. How Does Hypodontia Compare in Nonsyndromic Pierre Robin Sequence Versus Isolated Cleft Palate and Isolated Cleft Lip?** Cleft Palate Craniofac J. 2022 May;59(5):603-608. doi: 10.1177/10556656211017778. Epub 2021 May 21. Dillon M(1)(2), Seshu M(3)(4), Flannigan N(1), Dominguez-Gonzalez S(3). OBJECTIVE: To assess the prevalence and patterns of hypodontia in nonsyndromic Pierre Robin sequence (PRS) and compare it with hypodontia in nonsyndromic isolated cleft palates and isolated cleft lips. DESIGN: Retrospective cohort study. SETTING: Alder Hey Children's Hospital, United Kingdom. PATIENTS: Patients with nonsyndromic PRS (group 1), isolated cleft palate (group 2), and isolated cleft lip (group 3). MAIN OUTCOME MEASURES: Hypodontia in the permanent dentition assessed from orthopantomographs. RESULTS: A total of 154 patients were included. Group 1 had the highest incidence of hypodontia with 47% having at least one tooth congenitally absent. Groups 2 and 3 had reduced rates of hypodontia with 27% and 19% of the groups missing teeth, respectively; 93% of cases of hypodontia in group 1 involved the absence of at least one second premolar. Of these patients, there was found to be bilateral agenesis of second premolars in 50% of cases. CONCLUSIONS: Patients with PRS and cleft palates are more likely to have hypodontia than those with isolated cleft palates or unilateral cleft lips. Patients with PRS have more severe hypodontia than those with isolated cleft palates or unilateral cleft lips. Bilateral agenesis of lower second premolars is a commonly seen pattern among patients with PRS. In this large UK study, a similar prevalence and pattern of hypodontia to other nonsyndromic PRS populations worldwide has been demonstrated. DOI: 10.1177/10556656211017778 PMID: 34018409 [Indexed for MEDLINE]

**167. Associated congenital anomalies and syndromes of 248 infants with orofacial clefts born between 2011 and 2014 in the Japan environment and children's study.** Congenit Anom (Kyoto). 2023 Jan;63(1):9-15. doi: 10.1111/cga.12496. Epub 2022 Oct 6. Sato Y(1), Yoshioka E(1), Saijo Y(1), Kato Y(2), Nagaya K(3), Takahashi S(4), Ito Y(5), Kobayashi S(6), Ait Bamai Y(6), Yamazaki K(6), Itoh S(6), Miyashita C(6), Ikeda-Araki A(6)(7), Kishi R(6); Japan Environment and Children's Study (JECS) Group. This study aimed to document the complication status of infants with orofacial clefts born between 2011 and 2014 in Japan. This was a descriptive study using data from the Japan Environment and Children's Study. Among 103 060 pregnancies, 248 infants with orofacial clefts were included (livebirth, 239; stillbirth, 4; miscarriage, 5). The items of interest were complication status of orofacial clefts: isolated (typical orofacial clefts only); multi-malformed (orofacial clefts with unrelated major defects); syndromic (orofacial clefts with a syndrome or a chromosomal defect). Regarding the cleft subtypes, of 248 infants with orofacial clefts, 104 had cleft lip with cleft palate (CLP) (41.9%), 68 had cleft lip without cleft palate (CL) (27.4%), 58 had cleft palate without cleft lip (CP) (23.4%), and 18 were nonclassified (7.3%). In infants with CLP, the proportions of isolated, multi-malformed, and syndromic phenotypes were 73.1%, 15.4%, and 11.5%, respectively. In infants with CL, the proportions were 79.4%, 16.2%, and 4.4%, respectively. In infants with CP, the proportions were 69.0%, 13.8%, and 17.2%, respectively. The most frequently associated congenital anomaly was congenital heart disease. In infants with syndromic CLP, 41.7% had trisomy 13. In infants with syndromic CP, 80.0% had the Pierre Robin sequence. Congenital heart disease could be the most frequently associated congenital anomaly. The most frequently associated syndrome could be trisomy 13 in those with CLP and Pierre Robin sequence in those with CP. DOI: 10.1111/cga.12496 PMID: 36151603 [Indexed for MEDLINE]

## Geriatrics/Long Term Care

168. **Tooth retention, health, and quality of life in older adults: a scoping review.** BMC Oral Health. 2022 May 18;22(1):185. doi: 10.1186/s12903-022-02210-5. Atanda AJ(1)(2), Livinski AA(3), London SD(4)(5)(6), Boroumand S(4), Weatherspoon D(7), Iafolla TJ(4), Dye BA(8)(9). OBJECTIVE: This scoping review describes the relationship between tooth retention, health, and quality of life in older adults. METHODS: Seven databases were searched for English language articles for subjects  $\geq 65$  y from 1981 to 2021. Exposure was tooth retention ( $\geq 20$ ), and outcomes were general/systemic health and quality of life. Methodological quality was assessed using the Newcastle-Ottawa Scale and Cochrane Risk of Bias 2.0 tool. RESULTS: 140 articles were included, only four were randomized trials. Inter-rater agreement ( $\kappa$ ) regarding study inclusion was 0.924. Most were assessed with low risk of bias ( $n = 103$ ) and of good quality ( $n = 96$ ). Most studies were conducted in Japan ( $n = 60$ ) and Europe ( $n = 51$ ) and only nine in the US. Tooth retention was referred to as "functional dentition" in 132 studies and "shortened dental arch" in 19 studies. Study outcomes were broadly synthesized as (1) cognitive decline/functional dependence, (2) health status/chronic diseases, (3) nutrition, and (4) quality of life. DISCUSSION: There is a positive relationship between tooth retention, overall health, and quality of life. Older adults retaining  $\geq 20$  teeth are less likely to experience poorer health. Having  $< 20$  teeth increases the likelihood for functional dependence and onset of disability, and may affect successful ageing. This review supports the general finding that the more teeth older adults retain as they age, the less likely they are to have adverse health outcomes. However, significant knowledge gaps remain which can limit decision-making affecting successful ageing for many older adults. This review highlights the need to consider, as an important marker of oral health and function, the retention of a functional minimum of a natural dentition, rather than a simple numeric score of missing teeth. DOI: 10.1186/s12903-022-02210-5 PMID: 35585618 [Indexed for MEDLINE]
169. **Maintenance issues of elderly patients requiring nursing care with implant treatments in dental visiting: position paper.** Int J Implant Dent. 2022 Dec 8;8(1):63. doi: 10.1186/s40729-022-00458-8. Ohkubo C(1), Ikumi N(2), Sato Y(3), Shirai M(4), Umehara K(5), Ohashi I(6), Shibagaki H(6), Niki Y(7), Masaki C(8), Mikami I(9), Murakami H(10), Yoshinaga O(11), Wada M(12), Watanabe F(13). PURPOSE: Japan, with an increasing number of elderly people needing long-term care in a super-aged society, urgent needs to develop the clinical guidelines on implant maintenance for elderly people with declining independence. The purpose is to categorize the troubles encountered in the care of patients with dental implants and to indicate actual practices and points of note. METHODS: From the members of the Japanese Society of Oral Implantology, 12 expert panelists who were experienced with many problems of implant maintenance during dental visits and were familiar with their solutions were selected. Through repeated discussions in the many panel meetings, the problems of implant maintenance during dental visits were distilled. RESULTS: During a dental visit, the oral cavity, general conditions, and background of elderly patients who cannot orally care for themselves must be grasped, and medical staff, care managers, and patients should understand the changes in these factors as time goes by. The solutions and responses that can be made differ greatly depending on the medical care facilities, the environment, differences in the experience of medical staff, and the patient's background. Thus, it is necessary to select safe treatments appropriate to each situation. CONCLUSIONS: This paper features many opinions based on clinical experiences. However, clinical guidelines on implant management during dental visits should be formulated in the future based on the accumulation of evidence through the implementation of clinical research. DOI: 10.1186/s40729-022-00458-8 PMID: 36482021 [Indexed for MEDLINE]
170. **Calcified carotid artery atheromas in individuals with cognitive dysfunction.** Acta Odontol Scand. 2023 May;81(4):325-331. doi: 10.1080/00016357.2022.2152863. Epub 2022 Dec 20. Jonsson A(1)(2), Holmer J(1), Kullman L(3), Eriksdotter M(4)(5), Ahlqvist J(6), Levring Jäghagen E(6), Buhlin K(1). OBJECTIVE: The aim of this case-control study was to investigate whether cognitively impaired individuals have a higher burden of calcified carotid artery atheroma (CCAA) than controls without cognitive impairment. MATERIAL AND METHODS: The study included 154 cases with Alzheimer's disease ( $n = 52$ ), mild cognitive impairment ( $n = 51$ ), or subjective cognitive decline ( $n = 51$ ) diagnosed at a university memory clinic. Seventy-six cognitively healthy controls were sampled through the Swedish population register. All participants underwent clinical oral and panoramic radiographic examinations. Two oral and maxillofacial radiologists performed blinded analyses of the panoramic radiographs for signs of CCAA, which was registered as absent or present and, if present, unilateral or bilateral. Consensus assessment was used for all statistical analyses. RESULTS: CCAA was common (40%) in this middle-aged and older Swedish population. We found no differences in the prevalence of CCAA between cases and controls (40% vs. 42%). CONCLUSION: Cognitively impaired patients do not have a higher burden of CCAA than matched controls without cognitive impairment. DOI: 10.1080/00016357.2022.2152863 PMID: 36538364 [Indexed for MEDLINE]
171. **Oral Inflammatory Burden and Carotid Atherosclerosis Among Stroke Patients.** J Endod. 2022 May;48(5):597-605. doi: 10.1016/j.joen.2022.01.019. Epub 2022 Feb 7. Leão TSS(1), Tomasi GH(2), Conzatti LP(2), Marrone LCP(2), Reynolds MA(3), Gomes MS(4). INTRODUCTION: This study aimed to test the hypothesis that oral inflammatory burden (OIB) is independently associated with the carotid atherosclerotic burden (CAB) among individuals with ischemic stroke (IS) or transient ischemic attack (TIA). METHODS: This cross-sectional observational study included 240 hospital patients with the diagnosis of IS or TIA. The

main exposures were apical periodontitis (AP), root canal treatment (RCT), and crestal alveolar (periodontal) bone loss (BL), and the main outcome was the CAB. Exposure and outcome variables were measured through a head and neck multidetector computed tomography angiography and CAB was dichotomized in <50% and ≥50% vessel occlusion. OIB scored as a composite measure of the endodontic and periodontal disease exposure. Hospital health records provided information on sociodemographic and medical covariates. Prevalence ratios (PRs) were calculated through Poisson regression models, estimating the relationship between the oral exposures and CAB, with α = 5%. RESULTS: Mean age was 62.15 ± 13.1 years, with 56.7% men. Univariate analyses showed that AP ≥ 2 (PR = 1.83; 95% confidence interval [CI], 1.05-3.17) and endodontic burden (EB) (AP and/or RCT ≥ 2) (PR = 1.98; 95% CI, 1.13-3.47) were associated with CAB ≥ 50%. Multivariate models, adjusted for sociodemographic and medical covariates, revealed that pooled periodontal and endodontic parameters (OIB = BL ≥ 5 mm and EB ≥ 2) were independently associated with CAB ≥ 50% (PR = 2.47; 95% CI, 1.04-5.87). CONCLUSION: A higher OIB was independently associated with increased levels of CAB among hospital patients with IS or TIA. The combination of endodontic and periodontal parameters strengthened the observed association and should be evaluated in future studies on the relationship between oral health and cardiovascular outcomes. DOI: 10.1016/j.joen.2022.01.019 PMID: 35143813 [Indexed for MEDLINE]

172. **Decision-Making concerning Involuntary Oral Care for Older Individuals with Dementia.** Int J Environ Res Public Health. 2022 Dec 11;19(24):16655. doi: 10.3390/ijerph192416655. Jonker M(1), Engelsma C(2), Manton DJ(3)(4), Visser A(1)(5). Many older individuals with dementia (OIWD) show care-resistant behavior for oral care. Providing care despite resistance is considered to be involuntary care. Although involuntary care should be minimized, in some OIWD it may be necessary to avoid health risks. This study aims to assess the attitudes of healthcare providers with regard to involuntary oral care provision for OIWD who show care-resistant behavior. An online questionnaire consisting of general questions and case specific questions was administered via social media and networking to individuals involved in the oral care of OIWD. A total of 309 participants were included in this study. The outcomes of the questionnaires were categorized per case. In all cases, a discrepancy was seen between the assessment of oral health problems as potentially harmful (range: 73.1-93.5%) and the willingness to provide involuntary care (range: 31.1-63.4%). Hence, many healthcare providers are aware of the subsequent potential health risks related to not providing care, but are still reluctant to provide involuntary oral care. Therefore, many OIWD who show care-resistant behavior potentially do not receive the necessary oral care they require. DOI: 10.3390/ijerph192416655 PMID: 36554537 [Indexed for MEDLINE]
173. **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(1), Frenzel S(2), Holtfreter B(3), Van der Auwera S(2)(4), Pink C(3), Bülow R(5), Friedrich N(6)(7), Völzke H(7)(8), Biffar R(1), Kocher T(3), Grabe HJ(2)(4); Alzheimer's Disease Neuroimaging Initiative. 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. DOI: 10.1002/alz.12378 PMID: 34050719 [Indexed for MEDLINE]
174. **The relationship between periodontal disease and cognitive impairment in older adults of Korea.** Spec Care Dentist. 2022 Mar;42(2):170-176. doi: 10.1111/scd.12657. Epub 2021 Oct 6. Kim DH(1), Han GS(1). AIMS: A potential association between the periodontal disease and cognitive impairment has been suggested, but the results are not yet conclusive. This study investigated the association between the two diseases. METHODS AND RESULTS: This study included 140 individuals (M: 48, F: 92, average age: 77.2). For assessing cognitive ability, MMSE-KC was used. The BGI index categorizes the periodontal disease based on important clinical parameters. In model 1 using the BGI index and the number of residual teeth as independent variables, the cognitive function status was significantly lower in the DL/MB group (β = -0.294), DL/LB group (β = -0.237). In Model 2 including systemic disease was the DL/MB group (β = -0.316) and in Model 3 which also added demographic characteristics, the DL/MB group (β = -0.229) was identified as a related factor (p < .05). CONCLUSION: It can be concluded that periodontal disease is strongly associated with cognitive ability. DOI: 10.1111/scd.12657 PMID: 34614224 [Indexed for MEDLINE]
175. **Dose-dependent association between xerostomia and number of medications among older adults.** Spec Care Dentist. 2022 May;42(3):225-231. doi: 10.1111/scd.12662. Epub 2021 Oct 13. 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  $74.2 \pm 7.0$ , 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. DOI: 10.1111/scd.12662 PMID: 34644409 [Indexed for MEDLINE]

176. **Trigeminal Neuralgia Is a Dementia Risk Factor: A Retrospective Cohort Study.** *Int J Environ Res Public Health.* 2022 May 17;19(10):6073. doi: 10.3390/ijerph19106073. Cheng YH(1), Wu CH(1)(2), Wang WT(3), Lu YY(4)(5), Wu MK(6)(7). Background: Dementia, a worldwide public-health issue, is regarded as a disorder rather than a normal aging process. Trigeminal neuralgia (TN) is a chronic debilitating pain disorder that impairs daily activities. Both are most prevalent in females and in patients older than 50 years. Recent studies reveal that pain and dementia may have a reciprocal interaction with each other. Objective: In response, we estimated whether adults with TN have an increased dementia risk. Methodology: By means of Taiwan's National Health Insurance Research Database, between 1996 and 2010, 762 patients aged over 50 years in the TN group were matched with 3048 patients in the non-TN group at a ratio of 1:4. Kaplan-Meier method and Cox proportional hazard regression models were also used to determine the cumulative incidence and compare the hazard ratios of dementia in each group. Results: The incidence of dementia was higher in the TN group compared to the non-TN group. After adjusting for covariates, the TN group had a 4.47-fold higher risk of dementia compared to the non-TN group. Additionally, the impact of TN on dementia risk was larger in young-aged patients than in old-aged patients. As well, the age at the time of dementia diagnosis was younger in the TN group compared to the non-TN group. Conclusions: TN is a dementia risk factor. Given the lack of a curative therapy for dementia, early identification of TN patients may help to prevent dementia sequelae. DOI: 10.3390/ijerph19106073 PMCID: PMC9142042 PMID: 35627610 [Indexed for MEDLINE]
177. **Effects of food neophobia and oral health on the nutritional status of community-dwelling older adults.** *BMC Geriatr.* 2022 Apr 18;22(1):334. doi: 10.1186/s12877-022-03013-7. Yodogawa T(1), Nerome Y(2), Tokunaga J(3), Hatano H(4), Marutani M(5). Erratum in *BMC Geriatr.* 2022 May 17;22(1):431. BACKGROUND: Food preferences and oral health of older adults greatly affect their nutritional intake, and old-age-related increase in food neophobia may consequently reduce food intake in older adults. This study aimed to determine the impact of food neophobia and oral health on nutritional risk in community-dwelling older adults. METHODS: This cross-sectional study included 238 independent adults aged  $\geq 65$  years (mean,  $76.3 \pm 7.3$  years). The survey items included a Food Neophobia Scale, frequency of protein intake, oral-health-related quality of life (QOL) assessment, and oral diadochokinesis (ODK; /pa/, /ta/, /ka/) as an index of oral function. Nutritional status was assessed using the Mini Nutritional Assessment®, and based on a cutoff value of 24 points, respondents were categorized as well-nourished ( $\geq 24$  points, Group 1) or at risk of malnutrition ( $< 24$  points, Group 2). A logistic regression model was used to calculate the adjusted odds ratio (adj-OR) with 95% confidence interval (CI) to identify risks factors for malnutrition associated with food neophobia and oral health. RESULTS: Factors associated with the risk of malnutrition in the older population were higher food neophobia (adj-OR = 1.036, 95% CI: 1.007-1.067) and lower oral function (OR = 0.992, 95% CI: 0.985-0.999) and lower oral-health-related QOL (adj-OR = 0.963, 95% CI: 0.929-0.999). CONCLUSIONS: Older adults at risk of developing malnutrition may have higher food neophobia and lower oral function and oral-health-related QOL. Factors contributing to preventing malnutrition include predicting the risk of malnutrition based on the oral health indicators that older people are aware of, signs appearing in the oral cavity, minor deterioration, and providing dietary guidance about food neophobia. Notably, these approaches represent novel strategies for nutrition support that can be implemented based on a multifaceted understanding of the eating habits of older adults. DOI: 10.1186/s12877-022-03013-7 PMCID: PMC9014621 PMID: 35436942 [Indexed for MEDLINE]
178. **Periodontitis and cognitive impairment in older adults: The mediating role of mitochondrial dysfunction.** *J Periodontol.* 2022 Sep;93(9):1302-1313. doi: 10.1002/JPER.21-0620. Epub 2022 May 5. Li A(1)(2), Du M(3), Chen Y(4)(5), Marks LAM(2), Visser A(2)(6), Xu S(1), Tjakkes GE(2). BACKGROUND: Increased attention has been focused on the associations of periodontal disease with the onset and progression of cognitive impairment. Although the associations are likely to be multifactorial, few studies have explored the role of mitochondrial dysfunction in the periodontitis-dementia link. METHODS: Cross-sectional data of 1,883 participants aged  $\geq 60$  years in the National Health and Nutrition Examination Survey 2011-2014 were analyzed. The following data were collected: 1) general information on sociodemographic, behavioral, and health-related factors; 2) periodontal status (mean attachment loss [AL] and mean probing depth [PD]); 3) mitochondrion-derived biomarker of mitochondrial dysfunction (blood sample concentration of methylmalonic acid [MMA]); 4) cognitive function (Consortium to Establish a Registry for Alzheimer's disease immediate recall [CERAD-IR] and delay recall [CERAD-DR], animal fluency test, and digit symbol substitution

test [DSST]). Mediation analysis weighted for complex survey design was used to assess the effect of MMA on the association of periodontal status with cognitive function after adjusting for potential confounders. RESULTS: Participants with Stage III and IV periodontitis had lower scores on cognitive performance and higher MMA levels than those with Stages I/II periodontitis. Circulating MMA was significantly associated with CERAD-DR (weighted  $\beta$  [SE] = -0.076 [0.011]) and DSST (weighted  $\beta$  [SE] = -0.039 [0.009]), which mediated 9.9% and 6.0% of the total association of mean PD with cognitive function. Moreover, MMA mediated 11.7% and 5.8% of the association of mean AL with CERAD-DR and DSST, respectively. CONCLUSION: The findings suggest that MMA, a biomarker of mitochondrial dysfunction, plays a mediating role in the link between periodontitis and cognitive impairment in older adults aged  $\geq 60$  years. DOI: 10.1002/JPER.21-0620 PMID: PMC9790481 PMID: 35363382 [Indexed for MEDLINE]

179. **Tooth Loss Trajectories and Their Association with Functional Disability among Older Chinese Adults: Results from the Chinese Longitudinal Healthy Longevity Survey.** J Evid Based Dent Pract. 2022 Dec;22(4):101771. doi: 10.1016/j.jebdp.2022.101771. Epub 2022 Aug 5. Huang G(1), Cao G(2). BACKGROUND: Tooth loss becomes more prevalent with age and increases risk of functional disability. However, the strength of tooth loss varies between individuals rather than a uniform loss with age. We aimed to evaluate tooth loss trajectories and their association with functional disability among older Chinese adults. METHODS: We included 16,209 participants aged  $\geq 65$  years from five waves of the Chinese Longitudinal Healthy Longevity Survey 2002-2014. The number of teeth, Activities of Daily Living (ADL), and Instrumental ADL (IADL) were assessed at baseline and subsequently every three years. ADL disability and IADL disability were defined as needing any help in any item of the Katz scale and a modified Lawton's scale, respectively. A group-based trajectory model was used to determine tooth loss trajectories based on the self-reported number of teeth and generalized estimating equation models were used to explore associations of tooth loss trajectories with ADL disability and IADL disability. RESULTS: This study identified four tooth loss trajectories, including Progressively Mild Loss (14.4%), Progressively Severe Loss (21.5%), Persistently Severe Loss (45.1%), and Edentulism (19.0%) among older Chinese adults. Compared with the Progressively Mild Loss trajectory, the Progressively Severe Loss (ADL disability: OR=1.45, 95% CI: 1.15-1.84; IADL disability: OR=1.71, 95% CI: 1.47-1.99), Persistently Severe Loss (ADL disability: OR=2.33, 95% CI: 1.93-2.82; IADL disability: OR=3.29, 95% CI: 2.82-3.84) and Edentulism (ADL disability: OR=3.25, 95% CI: 2.58-4.09; IADL disability: OR=3.60, 95% CI: 2.93-4.42) trajectories were significantly associated with an increased risk of functional disability with adjustment for potential confounders. CONCLUSION: Four distinct tooth loss trajectories were identified among older adults and those with severe tooth loss trajectories had an increased risk of functional disability than those with a mild loss trajectory. DOI: 10.1016/j.jebdp.2022.101771 PMID: 36494112 [Indexed for MEDLINE]
180. **Assessment of oral health in elderly patients with dementia by measuring volatile sulfur compounds and its relationship with pneumonia development: A pilot study.** Respir Investig. 2022 Jan;60(1):162-166. doi: 10.1016/j.resinv.2021.08.006. Epub 2021 Sep 13. Koga S(1), Takazono T(2), Serita T(3), Ashizawa N(1), Hirayama T(1), Tashiro M(4), Hosogaya N(5), Yamamoto K(1), Imamura Y(1), Yamaguchi H(1), Sakamoto N(1), Obase Y(1), Yanagihara K(6), Izumikawa K(4), Mukae H(1). BACKGROUND: This study aimed to clarify the involvement of anaerobes in aspiration pneumonia by measuring volatile sulfur compounds (VSCs), which are metabolites of anaerobic bacteria in the mouth. METHODS: This study included 84 older adult patients (mean age,  $82.5 \pm 7.34$  years) who had dementia and were hospitalized for more than 6 months. We measured the VSCs in the patient's mouth with Oral Chroma and obtained the data of pneumonia development in the past 6 months. We also evaluated the association or correlation of VSCs and some factors which might be the risk factors of aspiration pneumonia. RESULTS: The development of pneumonia had no significant association with the VSCs in the patient's mouth. CONCLUSION: The present pilot study suggests that anaerobes might not be the main causative pathogens of aspiration pneumonia in older adult patients. DOI: 10.1016/j.resinv.2021.08.006 PMID: 34531175 [Indexed for MEDLINE]
181. **Tooth loss and cognitive decline in community dwelling older Irish adults: A cross-sectional cohort study.** J Dent. 2022 Apr;119:104077. doi: 10.1016/j.jdent.2022.104077. Epub 2022 Feb 24. Winning L(1), Naseer A(2), De Looze C(3), Knight SP(3), Kenny RA(4), O'Connell B(5). OBJECTIVES: To investigate whether tooth loss and related loss of occluding tooth pairs, were associated with cognitive decline in a group of community dwelling older men and women from Ireland. METHODS: A group of 2508 men and women, aged 50-93 years, underwent a dental examination as part of The Irish Longitudinal Study of ageing (TILDA). Global cognitive function was assessed using the mini-mental state examination (MMSE). Analysis included multiple logistic regression with adjustment for various confounders. RESULTS: The mean age of participants was 65.5 years (SD 8.1) and 55.3% of the group were female. Three hundred and twenty-nine (13.1%) of the cohort were classified as having a low MMSE with a score  $\leq 27$ . After adjustment for confounding variables, compared to subjects with  $\geq 20$  teeth, the odds ratio for a low MMSE amongst edentulous was 1.55 (95% CI 1.03-2.34)  $p = 0.03$ , and for those with 1-19 teeth was 1.38 (95% CI 1.03-1.84)  $p = 0.04$ . Having  $< 10$  natural occluding pairs and  $< 4$  posterior occluding pairs also associated with a low MMSE. CONCLUSIONS: In this cross-sectional cohort study, tooth loss and related loss of occluding tooth pairs were associated with a low MMSE in a group of older adults from Ireland, independent of various known confounders. CLINICAL SIGNIFICANCE: Dentists should be

aware of the potential systemic health implications of patients presenting with tooth loss. Tooth loss may be an important risk indicator for cognitive decline. DOI: 10.1016/j.jdent.2022.104077 PMID: 35219780 [Indexed for MEDLINE]

- 182. A Standardized Positive Physical Approach to Improve Oral Hygiene for Nursing Home Residents With Alzheimer's Disease and Related Dementias.** J Gerontol Nurs. 2022 Nov;48(11):15-20. doi: 10.3928/00989134-20221003-07. Epub 2022 Nov 1. Barry BJ, McConnell ES, Dunea SR, Blodgett NP. Residents with Alzheimer's disease and related dementias (ADRD) in nursing homes (NHs) rely on direct care workers (DCWs) to assist with activities of daily living, such as oral hygiene. The current quality improvement project was implemented to evaluate the effectiveness of teaching a standardized positive physical approach to oral hygiene completion for patients with ADRD residing in a NH. A pre-/postintervention evaluation incorporating a video presentation coupled with a hands-on simulation experience showed a statistically significant improvement in DCWs' overall Sense of Competency in Dementia score, as well as all subcategories of the Sense of Competence in Dementia Care Staff survey. In addition, residents' day shift oral hygiene care completion rates increased monthly pre- to postintervention. NHs should consider implementing training that includes hands-on experiences to equip DCWs with the knowledge and skill needed to improve oral hygiene among residents with ADRD. [Journal of Gerontological Nursing, 48(11), 15-20.]. DOI: 10.3928/00989134-20221003-07 PMID: 36286505 [Indexed for MEDLINE]
- 183. Black Hairy Tongue Associated With Olanzapine Use in a Female Dementia Patient: A Case Report.** J Clin Psychopharmacol. 2022 Mar-Apr 01;42(2):211-214. doi: 10.1097/JCP.0000000000001503. Long S, Chen Y, Shi J, Tian J, Ni J. DOI: 10.1097/JCP.0000000000001503 PMID: 34935654 [Indexed for MEDLINE]
- 184. The Impact of Masticatory Function on Cognitive Impairment in Older Patients: A Population-Based Matched Case-Control Study** Yonsei Med J. 2022 Aug;63(8):783-789. doi: 10.3349/ymj.2022.63.8.783. Ko KA(#)(1)(2), Park JY(#)(1)(2), Lee JS(1)(2), Ye BS(3), Jung UW(1), Choi SH(1)(2), Cha JK(1)(4). **PURPOSE:** The aim of this study was to investigate the association between the changes in masticatory function and cognitive impairment by analyzing longitudinal data of older Korean patients. **MATERIALS AND METHODS:** Patients aged over 60 years with dental records between 2005 to 2010 (baseline; T1) and 2014 to 2020 (follow-up; T2) were selected in a single medical center. Based on the dementia diagnosis after T2, the cohort was classified into two groups, the dementia group (n=122) and the control group (n=366). Changes in masticatory function were calculated using the total functional tooth unit (T-FTU) in both groups. The incidence of tooth extraction (%) and the subsequent rehabilitation during the observation period were also evaluated. **RESULTS:** In the dementia group, T-FTU significantly decreased from T1 to T2 (9.81±2.78 to 9.11±3.16, respectively, p=0.008), while no significant change was observed in the control group. During the mean observation period of 9 years, significantly more teeth were extracted and neglected to be prosthetically restored in the dementia group than in the control group. Regression analysis revealed that the number of missing teeth neglected [odds ratio (OR)=1.195, 95% confidence interval (CI)=1.025-1.393, p=0.023] and previous alcohol consumption (OR=4.445, 95% CI=1.831-1.795, p=0.001) were the most significant risk factors of dementia. **CONCLUSION:** There might be a causative relationship between the neglected missing dentition and the onset of dementia. DOI: 10.3349/ymj.2022.63.8.783 PMID: 35914761 [Indexed for MEDLINE]
- 185. Assessment of subjective and objective masticatory function among elderly individuals with mild cognitive impairment.** Aging Clin Exp Res. 2023 Jan;35(1):107-115. doi: 10.1007/s40520-022-02290-x. Epub 2022 Nov 11. Lee NJ(1), Kim HJ(2), Choi Y(1), Kim TB(3), Jung BY(4). **BACKGROUND:** Masticatory function is known to be related to cognitive ability; therefore, factors for improving masticatory function should be identified. **AIMS:** This study aimed to identify factors influencing masticatory function associated with mild cognitive impairment (MCI) in elderly individuals. **METHODS:** A total of 123 elderly participants [mean age: 76.5 ± 6.5 years; 82 females (66.7%), 41 males (33.3%)] were included. Cognitive function was evaluated by the Korean version of the Mini-Mental State Examination (KMMSE). Questionnaires for subjective evaluation were administered, and dynamic objective masticatory function evaluations, including chewing tests and bite force measurements, were performed. Intergroup differences were evaluated by the Wilcoxon rank-sum and chi-square test, and correlations between cognitive ability and masticatory function were evaluated by multilinear logistic regression. **RESULTS:** The number of teeth, number of posterior teeth, bite force, masticatory ability index (MAI) and posterior support status showed significant differences between the normal (KMMSE > 23) and MCI (KMMSE ≤ 23) groups. However, only the MAI, representing dynamic masticatory performance, was significantly associated with MCI regardless of age, sex and removable prostheses. The number of teeth and posterior teeth, bite force, subjective masticatory ability and posterior occlusal support showed no significant association with MCI. **DISCUSSION:** These results suggested the importance of chewing function for preventing the progression of cognitive impairment. **CONCLUSIONS:** Considering that only the MAI was significantly associated with MCI, it is more important to improve chewing efficiency by harmonizing therapeutic prosthetics with the surrounding masticatory system than simply increasing the number of teeth to prevent or delay cognitive impairment in elderly individuals. DOI: 10.1007/s40520-022-02290-x PMID: 36367631 [Indexed for MEDLINE]

- 186. Oral health problems and risk of incident disability in two studies of older adults in the United Kingdom and the United States.** J Am Geriatr Soc. 2022 Jul;70(7):2080-2092. doi: 10.1111/jgs.17792. Epub 2022 Apr 19. Kotronia E(1), Brown H(1),

Papacosta O(2), Lennon LT(2), Weyant RJ(3), Whincup PH(4), Wannamethee SG(2), Ramsay SE(1). BACKGROUND: Preventing oral health problems can be crucial for maintaining physical independence in older adults. We aimed to examine the associations of a range of oral health problems with incidence of disability in older adults. METHODS: We used prospective data from the British Regional Health Study (BRHS) (N = 2147, 71-92 years), and the Health, Aging and Body Composition (HABC) study (USA) (N = 3075, 71-80 years). Oral health measures included tooth loss, periodontal disease, self-rated oral health, and self-reported dry mouth. Participants were followed for onset of disability over a follow-up period of 3 years. Onset of disability was assessed through new cases of mobility limitations, activities of daily living (ADL), and instrumental activities of daily living (IADL). Logistic regression was performed to calculate the odds of incident disability. RESULTS: In the BRHS, tooth loss was associated with greater odds of mobility limitations and ADL difficulties. Periodontal disease was associated with greater incidence of mobility limitations. Self-report of  $\geq 3$  dry mouth symptoms was associated with increased odds of incident mobility limitations and ADL difficulties (OR = 2.08, 95% CI 1.27-3.42; OR = 1.73, 95% CI 1.03-2.90). Fair/poor self-rated oral health was associated with greater incidence of IADL difficulties. In the HABC study, complete tooth loss was associated with greater incidence of mobility limitations (OR = 1.86, 95% CI 1.13-3.06), and fair/poor self-rated oral health was associated with increased odds of incident ADL difficulties (OR = 1.42, 95% CI 1.04-1.94). CONCLUSIONS: Oral health problems in older adults, particularly tooth loss, self-reported dry mouth and self-rated oral health were associated with greater incidence of disability. Poor oral health plays a potentially important role in the development of disability in older populations, which in turn is an essential part of quality of life and healthy aging. DOI: 10.1111/jgs.17792 PMID: PMC9283258 PMID: 35437751 [Indexed for MEDLINE]

**187. Association between oral health markers and decline in muscle strength and physical performance in later life: longitudinal analyses of two prospective cohorts from the UK and the USA.** Lancet Healthy Longev. 2022 Nov;3(11):e777-e788. doi: 10.1016/S2666-7568(22)00222-7. Kimble R(1), McLellan G(2), Lennon LT(3), Papacosta AO(3), Weyant RJ(4), Kapila Y(5), Mathers JC(2), Wannamethee SG(3), Whincup PH(6), Ramsay SE(2). Erratum in Lancet Healthy Longev. 2023 Jan;4(1):e11. Comment in Lancet Healthy Longev. 2022 Nov;3(11):e727-e728. BACKGROUND: Poor oral health could be associated with changes in musculoskeletal health over time. This aim of this study was to investigate the longitudinal relationship between oral health and decline in physical function in later life. METHODS: We did a prospective analysis of two cohorts of older adults (aged 70 years or older) including men from the British Regional Heart Study (BRHS; n=612), and men and women from the Health, Aging and Body Composition (Health ABC) Study (n=1572), followed up for about 8 years. Data were available for clinical or self-reported oral health measures, muscle (grip) strength, and physical performance (chair stand and gait speed). ANCOVA models were used to assess the association between oral health and follow-up physical function scores. Multivariate logistic regression models were used to examine the associations between oral health and decline in physical function over the follow-up period. In the BRHS, changes in oral health and physical function were also assessed. All models were adjusted for relevant sociodemographic, behavioural, and health-related factors. FINDINGS: In the BRHS, complete tooth loss and difficulty eating were associated with weaker grip strength at follow-up, and periodontal status was associated with decline in gait speed. In the Health ABC Study, complete tooth loss, poor self-rated oral health, and the presence of one oral health problem were associated with slower gait speed at follow-up. In both studies, dry mouth was associated with declines in physical function. In the BRHS, deterioration of dentition (tooth loss) over the follow-up period was associated with decline in chair stand speed (adjusted odds ratio 2.34 [95% CI 1.20-4.46]), as was deterioration in difficulty eating (2.41 [1.04-5.60]). INTERPRETATION: Oral health problems are associated with poorer physical function and greater decline in physical function in older adults, and could be an indicator of individuals at risk of reduced physical capacity and subsequent frailty and disability in later life. FUNDING: The Dunhill Medical Trust and the US National Institutes of Health-National Institute of Dental and Craniofacial Research. DOI: 10.1016/S2666-7568(22)00222-7 PMID: 36356627 [Indexed for MEDLINE]

**188. Oral health status and its association with nutritional support in malnourished patients hospitalised in acute care.** Gerodontology. 2022 Sep;39(3):282-290. doi: 10.1111/ger.12582. Epub 2021 Jul 7. Furuya J(1)(2), Suzuki H(3), Hidaka R(4), Akatsuka A(4), Nakagawa K(2), Yoshimi K(2), Nakane A(2), Shimizu Y(5), Saito K(5), Itsui Y(5)(6), Tohara H(2), Sato Y(1), Minakuchi S(3). OBJECTIVES: This cross-sectional study aimed to examine the oral health of malnourished acute-care hospital inpatients, who were the subjects of a nutritional support team (NST). We also aimed to elucidate the systemic and nutritional factors associated with the oral health of those patients. BACKGROUND: Interventions by NST are essential for inpatient nutrition management and require the active participation of dental professionals. However, information is limited regarding the state of oral health among acute-stage malnourished inpatients. MATERIALS AND METHODS: We enrolled 255 hospitalised patients (101 women, mean age: 69.7  $\pm$  14.4 years) who were referred to an NST for nutrition management between April 2016 and July 2019. The main outcome was the Oral Health Assessment Tool (OHAT) scores. Moreover, we assessed participants' demographic characteristics, nutritional status, number of natural and functional teeth, posterior occlusal support, denture use, Dysphagia Severity Scale, whether oral health management was needed, and the methods of nutrition intake. RESULTS: Several participants presented with a deteriorated oral health. Consequently, oral health management was often regarded necessary in these patients. Approximately half were fed by parenteral or tube feeding. Multiple regression analysis revealed the OHAT score

has a positive association with age ( $P = .008$ ), and a negative association with body mass index ( $P = .009$ ) and the method of nutrition intake ( $P = .028$ ). CONCLUSION: Malnourished inpatients at an acute care hospital who were subject to an NST had a deteriorated oral health status. Additionally, poor oral health was associated with poor nutritional status and nutrition intake methods. DOI: 10.1111/ger.12582 PMID: 34235787 [Indexed for MEDLINE]

189. **Use and efficacy of mouthwashes in elderly patients: A systematic review of randomized clinical trials.** *Ann Anat.* 2023 Feb;246:152026. doi: 10.1016/j.aanat.2022.152026. Epub 2022 Nov 17. Pérez-Nicolás C(1), Pecci-Lloret MP(2), Guerrero-Gironés J(1). INTRODUCTION: A higher prevalence of oral problems has been observed in the elderly population. One of the treatment options for some of these pathologies is the administration of mouthwashes combined with mechanical removal techniques. Besides, each type of oral rinse treats certain oral diseases, and it should be selected for each specific situation. OBJECTIVE: To determine the use and efficacy of mouthwashes in the elderly as a treatment for various pathologies, to indicate the most common kinds of mouth-rinses used, the diseases treated with them, their efficacy in each treatment, and their effectiveness when they are combined with other treatments. MATERIAL AND METHODS: The review has been carried out following the PRISMA 2020 Statement. Individualized bibliographic searches were performed in five databases. Randomized clinical trials are included in patients over 60 years old where mouthwashes were administered to treat or prevent specific diseases. The PICO question aimed to assess what type of mouthwashes elderly patients use, what they use them for, and their efficacy. Study selection, data extraction, and quality analysis were achieved using the RoB-2 guide. RESULTS: Thirteen articles were chosen to perform the qualitative analysis. The bibliometric analysis was carried out. We have eleven randomized controlled clinical trials and two uncontrolled. The mouthwash more used was chlorhexidine, followed by essential oils and fluorides. The most studied pathologies were a periodontal disease, caries, candidiasis, denture stomatitis, and xerostomia. Chlorhexidine used weekly is effective as antiplaque and antigingivitis. Fluorides effectively prevent and reverse caries; nystatin and essential oils to treat candidiasis; and pilocarpine rinse to manage xerostomia. CONCLUSIONS: The included studies show that mouthwashes are widely extended in the elderly population, and each sort is specifically designed for treating a particular condition. DOI: 10.1016/j.aanat.2022.152026 PMID: 36402239 [Indexed for MEDLINE]
190. **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(1), Bøggild H(1), Hede B(2), Bagger M(3), Hartmann LG(3), Aagaard K(1)(4). 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. DOI: 10.1111/cdoe.12638 PMID: 33899261 [Indexed for MEDLINE]
191. **Oral Health Status in Subjects with Amnesic Mild Cognitive Impairment and Alzheimer's Disease: Data from the Zabút Aging Project.** *J Alzheimers Dis.* 2022;87(1):173-183. doi: 10.3233/JAD-200385. Panzarella V(1), Mauceri R(1), Baschi R(2), Maniscalco L(2), Campisi G(1), Monastero R(2). BACKGROUND: The relationship between Alzheimer's disease (AD) and periodontitis has been recently investigated with heterogenous results. OBJECTIVE: This study aims to evaluate the oral health status and its relationship with cognitive impairment of participants, enrolled in the Zabút Aging Project, a community-based cohort study performed in a rural community in Sicily, Italy. METHODS: A case-control study (20 subjects with AD, 20 with amnesic mild cognitive impairment [aMCI], and 20 controls) was conducted. The protocol included a comprehensive medical and cognitive-behavioral examination. Full-mouth evaluation, microbial analysis of subgingival plaque samples (by RT-PCR analysis), and oral health-related quality of life (OHR-QoL) were evaluated. RESULTS: The decayed, missing, and filled teeth (DMFT) total score of AD subjects was significantly higher than aMCI ( $p = 0.009$ ) and controls ( $p = 0.001$ ). Furthermore, the "M" component of DMFT (i.e., the number of missing teeth) was significantly higher in AD than in aMCI ( $p < 0.001$ ) and controls ( $p < 0.001$ ). A Poisson regression model revealed that age ( $p < 0.001$ ), male gender ( $p = 0.001$ ), and AD ( $p = 0.001$ ) were positively correlated with

DMFT. Concerning oral microbial load, the presence of *Fusobacterium nucleatum* was significantly higher in AD than in controls ( $p=0.02$ ), and a higher load of *Treponema denticola* was found in aMCI than with AD ( $p=0.004$ ). OHR-QoL scores did not differ among the groups. CONCLUSION: The current research suggests that AD is associated with chronic periodontitis, which is capable of determining tooth loss due to the pathogenicity of *Fusobacterium nucleatum*. These data remain to be confirmed in larger population-based cohorts. DOI: 10.3233/JAD-200385 PMID: 32508326 [Indexed for MEDLINE]

192. **Association between the number of remaining teeth and disability-free life expectancy, and the impact of oral self-care in older Japanese adults: a prospective cohort study.** BMC Geriatr. 2022 Oct 24;22(1):820. doi: 10.1186/s12877-022-03541-2. Yamato M(1), Matsuyama S(1), Murakami Y(2), Aida J(3), Lu Y(1), Sugawara Y(1), Tsuji I(4). BACKGROUND: Tooth loss has been reportedly associated with shorter disability-free life expectancy (DFLE). However, no study has explored whether oral self-care offsets reduction in DFLE. The present study aimed to assess the association between oral self-care and DFLE in older individuals with tooth loss. METHODS: Data on the 13-year follow-up from a cohort study of 14,206 older Japanese adults aged  $\geq 65$  years in 2006 were analyzed. Information on the number of remaining teeth was collected using a questionnaire, and the participants were then categorized into three groups (0-9, 10-19, and  $\geq 20$  teeth). Additionally, "0-9" and "10-19" groups were divided into two subgroups based on whether they practiced oral self-care. DFLE was defined as the average number of years a person could expect to live without disability, and was calculated by the multistate life table method based on a Markov model. RESULTS: DFLE (95% confidence interval) was 19.0 years (18.7-19.4) for 0-9 teeth, 20.1 (19.7-20.5) for 10-19 teeth, and 21.6 (21.2-21.9) for  $\geq 20$  teeth for men. For women, DFLE was 22.6 (22.3-22.9), 23.5 (23.1-23.8), and 24.7 (24.3-25.1), respectively. Practicing oral self-care was associated with longer DFLE, by 1.6-1.9 years with brushing  $\geq 2$  times a day in people with 0-9 and 10-19 teeth, and by 3.0-3.1 years with the use of dentures in those with 0-9 teeth. CONCLUSIONS: Practicing oral self-care is associated with an increase in DFLE in older people with tooth loss. DOI: 10.1186/s12877-022-03541-2 PMID: 36280835 [Indexed for MEDLINE]
193. **Differences in the oral health status in hospitalised stroke patients according to swallowing function: A cross-sectional study.** J Clin Nurs. 2023 Apr;32(7-8):1140-1147. doi: 10.1111/jocn.16254. Epub 2022 Mar 6. Tian F(1)(2), Li J(2), Wu B(3), Xiao R(4), Liu J(1), Yu J(1), Liu L(2), Zhu R(2). BACKGROUND: Dysphagia is one of the common complications caused by stroke, leading to poor oral health. Oral health is often neglected after stroke by clinical care providers and the patients. Identifying the status of oral health in hospitalised stroke patients with swallowing disorders will facilitate the attention of clinical care providers. AIM: To investigate the differences in the oral health status between hospitalised post-stroke patients with dysphagia and non-dysphagia. DESIGN: A cross-sectional study. METHODS: A purposive sampling method was used to recruit participants. Participants included hospitalised post-stroke patients with dysphagia and without dysphagia. Stroke patients were recruited from the Department of Neurology, Guizhou Provincial People's Hospital in China. A total of 120 stroke patients completed the survey. The data collected included their demographics, the scores on the Oral Health Assessment Tool (OHAT), Geriatric Oral Health Assessment Index (GOHAI), and the Eating Assessment Tool-10 (EAT-10). The study was compliant with the STROBE checklist. RESULTS: The average age of the dysphagia group was 67 (64~76) vs the participants without dysphagia group 67 (65~76), ( $p = .610$ ). The mean standard deviation (SD) OHAT score of participants with dysphagia was 5.28 (2.33) compared to participants without dysphagia 8.89 (3.07), ( $p < .05$ ). This result indicates post-stroke dysphagia (PSD) patients had worse oral health than stroke patients without dysphagia. Binary logistic regression analysis showed that oral health status was the independent influencing factor of swallowing function ( $p < .01$ ). CONCLUSION: The participants with dysphagia had worse oral health status compared to those without dysphagia, illustrating the critical importance of improving attention to oral health management in patients with post-stroke swallowing disorders. RELEVANCE TO CLINICAL PRACTICE: Oral health was often omitted when comparing to other functional impairments resulting from stroke. Health caregivers of post-stroke patients with dysphagia should be aware of the importance of evaluating patient's oral condition and implementing oral care. DOI: 10.1111/jocn.16254 PMID: 35253288 [Indexed for MEDLINE]
194. **Prevalence of pre-operative undiagnosed cognitive impairment and its association with handgrip strength, oral hygiene, and nutritional status in older elective surgical patients in Japan.** J Anesth. 2023 Feb;37(1):64-71. doi: 10.1007/s00540-022-03133-9. Epub 2022 Oct 28. Nakatani S(1)(2), Ida M(3), Uyama K(2), Kinugasa Y(2), Kawaguchi M(2). PURPOSE: Preoperative cognitive impairment is a significant factor influencing post-operative delirium. We have been performing routine pre-operative comprehensive assessments, including evaluation of cognitive function, handgrip strength, oral hygiene, and nutritional status, in patients aged  $\geq 65$  years since April 2021. This study aimed to examine the completion rate of pre-operative comprehensive assessment and assess the prevalence of pre-operative undiagnosed cognitive impairment. METHODS: In this prospective observational study including patients aged  $\geq 65$  years scheduled for elective surgery with general or regional anesthesia, cognitive impairment was defined as a Mini-Cog score  $\leq 2$ , and its associations with handgrip strength, oral hygiene, and nutritional status were evaluated. Oral hygiene and nutritional status were assessed using an oral frailty self-checklist and the Mini Nutritional Assessment-Short Form, respectively. The incidence of pre-operative undiagnosed cognitive impairment was estimated, and its associated factors were explored with multiple logistic regression. RESULTS: Among 331 eligible patients, the

completion rate was 97.7% (305/312). The mean age was 74.8 years, and 13.1% (40/305) (95% confidence interval [CI], 9.7-17.3%) of the patients had pre-operative undiagnosed cognitive impairment. Multiple logistic regression revealed that handgrip strength (odds ratio [OR] = 0.94, 95%CI = 0.89-0.99) and oral frailty self-checklist score (OR = 1.19, 95%CI = 1.02-1.40) were associated with pre-operative undiagnosed cognitive impairment, while the Mini Nutritional Assessment-Short Form score was not significantly associated (OR = 0.97, 95%CI = 0.82-1.14). CONCLUSIONS: Preoperative comprehensive assessment was feasible. The prevalence of pre-operative undiagnosed cognitive impairment was 13%, and poor handgrip strength and worse oral hygiene were significantly associated factors. DOI: 10.1007/s00540-022-03133-9 PMID: 36307608 [Indexed for MEDLINE]

195. **Effects of Integrative Cognitive Function Improvement Program on Cognitive Function, Oral Health, and Mental Health in Older People: A Randomized Clinical Trial.** *Int J Environ Res Public Health.* 2022 Nov 2;19(21):14339. doi: 10.3390/ijerph192114339. Jung ES(1), Choi YY(2), Lee KH(1). We aimed to investigate the effects of an integrative cognitive function improvement program that combined existing cognitive, emotional, and physical therapies on cognitive function, oral health, and mental health in elder participants. Participants were classified into one of the following groups: cognitively normal (CN; n = 18), mild cognitive impairment (MCI; n = 17), and control (n = 17). An integrative cognitive function improvement program was administered to the CN and MCI groups for six weeks. To measure cognitive function, electroencephalogram (EEG) and cerebral blood flow (CBF) were evaluated, and to measure oral health, the O'Leary index, Löe & Silness index, tongue coating, unstimulated saliva flow rate, and oral muscle strength were measured. To measure mental health status, mental health, happiness and social support were measured. The CN and MCI groups showed a significant change in EEG-based indices for awareness level and physical stress. Regarding oral health, the O'Leary and the Löe & Silness index score decreased significantly in the CN and MCI groups. Saliva flow rate increased significantly in the CN and MCI groups. In regards to mental health, the happiness score increased post-intervention in the CN and MCI groups. In conclusion, the integrative cognitive function improvement program was effective in improving cognitive function, oral health, and mental health of elder people. DOI: 10.3390/ijerph192114339 PMCID: PMC9659034 PMID: 36361215 [Indexed for MEDLINE]
196. **Association between oral health status and oral food intake level in subacute stroke patients admitted to a convalescent rehabilitation unit.** *Gerodontology.* 2022 Mar;39(1):67-73. doi: 10.1111/ger.12586. Epub 2021 Aug 26. Matsuo K(1)(2), Sekimoto Y(1), Okamoto M(1), Shibata S(3), Otaka Y(3). BACKGROUND: Stroke patients often suffer from dysphagia during their recovery. We hypothesised that subacute stroke patients with dysphagia had more deteriorated oral health status including muscle strength and motor function. OBJECTIVE: Quantitatively investigate oral health status and identify associations with oral feeding status in stroke patients admitted to a convalescent rehabilitation unit. METHODS: We prospectively recruited 187 stroke patients admitted to a convalescent rehabilitation unit. Oral feeding status was examined using the Functional Oral Intake Scale (FOIS), and the cohort was divided into three groups based on FOIS score as non-oral feeding (FOIS-123; 22 patients), dysphagic diet (FOIS-45; 74 patients), and regular diet (FOIS-67; 91 patients) groups. Activities of daily living (ADL) were assessed with the Functional Independence Measure (FIM). Oral health status was measured quantitatively in six oral function parameters and Oral Health Assessment Tool (OHAT), and differences according to the FOIS, age and FIM were statistically tested. RESULTS: In bivariate analysis, two parameters, tongue pressure and tongue-lip motor functions were significantly higher in the regular diet group than in the other groups (P < .01). Gross OHAT score was also significantly better in the regular diet group than in the other groups (P < .01). These significant associations mostly remained in the multiple model after adjusting for age and FIM. CONCLUSION: This study suggests that, amongst oral health status, tongue strength and motor function, as well as OHAT score, may have strong associations with oral feeding status in subacute stroke patients at convalescent rehabilitation units regardless of ADL levels. DOI: 10.1111/ger.12586 PMID: 34448242 [Indexed for MEDLINE]
197. **The OrBiD (Oral Health, Bite Force and Dementia) Pilot Study: A Study Protocol for New Approaches to Masticatory Muscle Training and Efficient Recruitment for Longitudinal Studies in People with Dementia.** *Int J Environ Res Public Health.* 2022 Mar 20;19(6):3700. doi: 10.3390/ijerph19063700. Jockusch J(1)(2), Wiedemeier D(3), Nitschke I(1)(4). Research with people with dementia is a great challenge in terms of recruitment, study participation and adherence to interventions resulting in less research activity and higher financial, organizational and personnel efforts. As dementia progresses, there is a deterioration in general and oral health and chewing function. Oral treatment options often focus on healthy patients. Interventions for people with dementia are needed. The aims of the paper were to describe the study protocol of the OrBiD (Oral Health, Bite Force and Dementia) pilot study as well as the description of two new methodological approaches. These are (A) an efficient recruitment process of people with dementia, simultaneous double study participation and (B) a novel approach to train the masticatory muscles by using physiotherapy. A novel methodology for the recruitment process (A) and, in particular, for the assignment of subjects to the experimental and control groups was developed and successfully tested. Additionally, a physiotherapy program (B) to train strength and coordination of the masticatory muscles was newly developed with the challenge to ensure that this training could also be carried out with people with cognitive impairments and dementia, if necessary, in cooperation with their relatives or caregivers. This was also successfully implemented. Recommendations for a feasibility assessment of a study involving people with dementia were made considering the organizational effort, the required personnel, structural and

financial resources, the required number of subjects and the type of study design. When planning crossed studies, it must be ensured that the content, the interventions or their possible results of the study arms do not influence each other. The overall aim of this paper is to demonstrate the sustainable and efficient feasibility of studies with people with dementia. DOI: 10.3390/ijerph19063700 PMID: PMC8992135 PMID: 35329390 [Indexed for MEDLINE]

198. **Clinical-based oral rehabilitation programme improved the oral diadochokinesis and swallowing function of older patients with dementia: A randomised controlled trial.** J Oral Rehabil. 2022 Dec;49(12):1163-1172. doi: 10.1111/joor.13375. Epub 2022 Nov 1. Chen MA(1), Liu CK(2)(3), Yang YH(4)(5)(6)(7), Huang ST(8)(9), Yen CW(9), Kabasawa Y(10), Huang HL(8). OBJECTIVE: To evaluate the effectiveness of a clinical-based oral function intervention on oral function and care behaviours in older patients with mild dementia. METHOD: Participants were randomly assigned to the experimental group (EG) and control group (CG). Both groups received a leaflet on oral health-related knowledge, and the EG also received an oral function intervention, which was a brief one-on-one lesson concerning oral exercise and preventive oral care. Oral exercise included turning the head, pouting lips, bulging cheeks, stretching tongue, articulation exercise and salivary gland massages. A reminder phone call was made every 2 weeks. Perceived xerostomia and dysphagia, plaque index (PI), Winkel tongue-coating index (WTCl), repetitive saliva-swallowing test (RSST), oral diadochokinesis (DDK) and oral care behaviours were recorded at baseline and at 3-month follow-up. Generalised Estimating Equations (GEE) were used to analyse the indicated effects. RESULTS: The EG (n = 59) exhibited greater improvement to the CG (n = 55) in RSST [ $\beta = 0.7$ ; effect size (ES) = 0.45], the syllables /pa/ ( $\beta = 3.1$ ; ES = 0.37) and /ka/ ( $\beta = 2.7$ ; ES = 0.40) in oral DDK, PI ( $\beta = -0.2$ ; ES = 0.52) and WTCl ( $\beta = -0.8$ ; ES = 0.38). Moreover, the EG exhibited better preventive behaviours in regular dental visits [adjusted odds ratio (aOR) = 2.2], daily mouth cleaning frequency (aOR = 1.6) and mouth cleaning before sleep (aOR = 1.3). CONCLUSION: The brief clinical-based intervention was effective in improving the swallowing function, oral DDK and plaque control of older patients with mild dementia at 3-month follow-up. DOI: 10.1111/joor.13375 PMID: 36152018 [Indexed for MEDLINE]
199. **Combined association of cognitive impairment and poor oral health on mortality risk in older adults: Results from the NHANES with 15 years of follow-up.** J Periodontol. 2022 Jun;93(6):888-900. doi: 10.1002/JPER.21-0292. Epub 2021 Nov 12. Li A(1)(2), Chen Y(3), Visser A(1)(4), Marks LAM(1), Tjakkes GE(1). BACKGROUND: Cognitive impairment and poor oral health are frequently seen among older adults. Both conditions have been identified as risk factors for mortality. However, the combined associations of cognitive impairment and poor oral health with mortality have not been well studied and are therefore the aim of this cohort study. METHODS: We analyzed data from the National Health and Nutrition Examination Survey (1999-2002) linked with mortality data obtained from the 2015 public-use linked mortality file. Cognitive impairment was defined as a digit symbol substitution test score lower than the lowest quartile. Oral health status was assessed based on presence of untreated caries, moderate to severe periodontitis, and edentulism. The combined effects of caries/periodontitis or edentulism and cognitive impairment on all-cause and cardiometabolic mortality were examined using the Cox proportional hazard models after adjusting for potential confounders including demographic characteristics, lifestyle, biomarkers, and comorbidities. RESULTS: In total, 1973 participants were enrolled in the prospective study. At a median follow-up of 13.4 years, 978 participants had died (264 deaths because of cardiometabolic disease). Cognitive impairment, periodontitis, and edentulism were each found to be significant predictors of all-cause mortality. Caries, however, was not significantly related to mortality. When analyzing these predictors in combination, a diagnosis of cognitive impairment and periodontitis was associated with an 83.1% increase in all-cause mortality risk and an 87.7% increase in cardiometabolic mortality risk compared with healthy controls. Similarly, the risk for all-cause mortality was highest in cases where impaired cognition and edentulism co-occurred (adjusted hazard ratio = 1.701, 1.338-2.161). CONCLUSION: Concomitant presence of cognitive impairment and periodontitis or edentulism can be associated with a higher risk of mortality among older U.S. adults. DOI: 10.1002/JPER.21-0292 PMID: PMC9298999 PMID: 34533839 [Indexed for MEDLINE]
200. **Study protocol for a randomised controlled trial of a care partner assisted intervention to improve oral health of individuals with mild dementia.** BMJ Open. 2022 Jun 22;12(6):e057099. doi: 10.1136/bmjopen-2021-057099. Wu B(1), Plassman BL(2), Poole P(2), Siamdoust S(3), Bunn M(4), Burwell B(2), Pei Y(3), Downey C(5), Gomes D(3), Kamer A(6), Yu G(3), Leak Bryant A(4), Anderson RA(4). INTRODUCTION: Individuals with mild dementia are at high risk of poor oral health outcomes. To address this issue, we describe an intervention to teach care partners skills to guide individuals with mild dementia in proper oral hygiene techniques and provide reminders to practice oral hygiene care. By providing support to perform these tasks successfully, we aim to delay oral health decline among this vulnerable population. METHODS AND ANALYSIS: This multisite study is a three-arm randomised controlled trial. The primary objective is to evaluate the efficacy of an intervention to improve oral hygiene outcomes by promoting positive oral hygiene behaviours and skills among individuals with mild dementia. Care partners' behaviour factors, such as oral care self-efficacy and implementation of the care plan, serve as mediators of the intervention. Participant-care partner dyads will be randomly assigned to either Treatment Group 1, Treatment Group 2 or the Control Group. All groups will receive an educational booklet. Treatment Group 1 and Treatment Group 2 will receive a smart electronic toothbrush. Treatment Group 2 (the intervention group) will also receive an oral hygiene care skill assessment, personalised

oral hygiene instruction and treatment plan; and care partners will receive in-home and telephone coaching on behaviour change. Oral health outcomes will be compared across the three groups. The duration of the active intervention is 3 months, with an additional 3-month maintenance phase. Data collection will involve three home visits: baseline, 3 months and 6 months. The study enrollment started in November 2021, and the data collection will end in Spring 2024. ETHICS AND DISSEMINATION: The study has been approved by the Institutional Review Board of the NYU Grossman School of Medicine and Duke University, and is registered at [Clinicaltrials.gov](https://clinicaltrials.gov). A Data Safety Monitoring Board has been constituted. The study findings will be disseminated via peer-reviewed publications, conference presentations and social media. TRIAL REGISTRATION NUMBER: NCT04390750. DOI: 10.1136/bmjopen-2021-057099 PMID: PMC9226943 PMID: 35732396 [Indexed for MEDLINE]

## **Antibiotic Prophylaxis/Stewardship**

**201. Antibiotic prophylaxis for preventing bacterial endocarditis following dental procedures.** Cochrane Database Syst Rev. 2022 May 10;5(5):CD003813. doi: 10.1002/14651858.CD003813.pub5. Rutherford SJ(1), Glenny AM(2), Roberts G(3), Hooper L(4), Worthington HV(5). Update of Cochrane Database Syst Rev. 2013 Oct 09;(10):CD003813. BACKGROUND: Infective endocarditis is a severe infection arising in the lining of the chambers of the heart. It can be caused by fungi, but most often is caused by bacteria. Many dental procedures cause bacteraemia, which could lead to bacterial endocarditis in a small proportion of people. The incidence of bacterial endocarditis is low, but it has a high mortality rate. Guidelines in many countries have recommended that antibiotics be administered to people at high risk of endocarditis prior to invasive dental procedures. However, guidance by the National Institute for Health and Care Excellence (NICE) in England and Wales states that antibiotic prophylaxis against infective endocarditis is not recommended routinely for people undergoing dental procedures. This is an update of a review that we first conducted in 2004 and last updated in 2013. OBJECTIVES: Primary objective To determine whether prophylactic antibiotic administration, compared to no antibiotic administration or placebo, before invasive dental procedures in people at risk or at high risk of bacterial endocarditis, influences mortality, serious illness or the incidence of endocarditis. Secondary objectives To determine whether the effect of dental antibiotic prophylaxis differs in people with different cardiac conditions predisposing them to increased risk of endocarditis, and in people undergoing different high risk dental procedures. Harms Had we found no evidence from randomised controlled trials or cohort studies on whether prophylactic antibiotics affected mortality or serious illness, and we had found evidence from these or case-control studies suggesting that prophylaxis with antibiotics reduced the incidence of endocarditis, then we would also have assessed whether the harms of prophylaxis with single antibiotic doses, such as with penicillin (amoxicillin 2 g or 3 g) before invasive dental procedures, compared with no antibiotic or placebo, equalled the benefits in prevention of endocarditis in people at high risk of this disease. SEARCH METHODS: An information specialist searched four bibliographic databases up to 10 May 2021 and used additional search methods to identify published, unpublished and ongoing studies SELECTION CRITERIA: Due to the low incidence of bacterial endocarditis, we anticipated that few if any trials would be located. For this reason, we included cohort and case-control studies with suitably matched control or comparison groups. The intervention was antibiotic prophylaxis, compared to no antibiotic prophylaxis or placebo, before a dental procedure in people with an increased risk of bacterial endocarditis. Cohort studies would need to follow at-risk individuals and assess outcomes following any invasive dental procedures, grouping participants according to whether or not they had received prophylaxis. Case-control studies would need to match people who had developed endocarditis after undergoing an invasive dental procedure (and who were known to be at increased risk before undergoing the procedure) with those at similar risk who had not developed endocarditis. Our outcomes of interest were mortality or serious adverse events requiring hospital admission; development of endocarditis following any dental procedure in a defined time period; development of endocarditis due to other non-dental causes; any recorded adverse effects of the antibiotics; and the cost of antibiotic provision compared to that of caring for patients who developed endocarditis. DATA COLLECTION AND ANALYSIS: Two review authors independently screened search records, selected studies for inclusion, assessed the risk of bias in the included study and extracted data from the included study. As an author team, we judged the certainty of the evidence identified for the main comparison and key outcomes using GRADE criteria. We presented the main results in a summary of findings table. MAIN RESULTS: Our new search did not find any new studies for inclusion since the last version of the review in 2013. No randomised controlled trials (RCTs), controlled clinical trials (CCTs) or cohort studies were included in the previous versions of the review, but one case-control study met the inclusion criteria. The trial authors collected information on 48 people who had contracted bacterial endocarditis over a specific two-year period and had undergone a medical or dental procedure with an indication for prophylaxis within the past 180 days. These people were matched to a similar group of people who had not contracted bacterial endocarditis. All study participants had undergone an invasive medical or dental procedure. The two groups were compared to establish whether those who had received preventive antibiotics (penicillin) were less likely to have developed endocarditis. The authors found no significant effect of penicillin prophylaxis on the incidence of endocarditis. No data on other outcomes were reported. The level of certainty we have about the evidence is very low. AUTHORS' CONCLUSIONS: There remains no clear evidence about whether antibiotic prophylaxis is

effective or ineffective against bacterial endocarditis in at-risk people who are about to undergo an invasive dental procedure. We cannot determine whether the potential harms and costs of antibiotic administration outweigh any beneficial effect. Ethically, practitioners should discuss the potential benefits and harms of antibiotic prophylaxis with their patients before a decision is made about administration. DOI: 10.1002/14651858.CD003813.pub5 PMID: PMC9088886 PMID: 35536541 [Indexed for MEDLINE]

- 202. Antibiotic prophylaxis before dental procedures to prevent infective endocarditis: a systematic review.** *Infection*. 2023 Feb;51(1):47-59. doi: 10.1007/s15010-022-01900-0. Epub 2022 Aug 16. Bergadà-Pijuan J(#)(1), Frank M(#)(2), Boroumand S(#)(2), Hovaguimian F(3)(4), Mestres CA(5), Bauernschmitt R(5), Carrel T(5), Stadlinger B(6), Ruschitzka F(2), Zinkernagel AS(3), Kouyos RD(3), Hasse B(7). PURPOSE: Infective endocarditis (IE) is a severe bacterial infection. As a measure of prevention, the administration of antibiotic prophylaxis (AP) prior to dental procedures was recommended in the past. However, between 2007 and 2009, guidelines for IE prophylaxis changed all around the world, limiting or supporting the complete cessation of AP. It remains unclear whether AP is effective or not against IE. METHODS: We conducted a systematic review whether the administration of AP in adults before any dental procedure, compared to the non-administration of such drugs, has an effect on the risk of developing IE. We searched for studies in the Cochrane Central Register of Controlled Trials (CENTRAL), MEDLINE via OVID, and EMBASE. Two different authors filtered articles independently and data extraction was performed based on a pre-defined protocol. RESULTS: The only cohort study meeting our criteria included patients at high-risk of IE. Analysis of the extracted data showed a non-significant decrease in the risk of IE when high-risk patients take AP prior to invasive dental procedures (RR 0.39, p-value 0.11). We did not find other studies including patients at low or moderate risk of IE. Qualitative evaluation of the excluded articles reveals diversity of results and suggests that most of the state-of-the-art articles are underpowered. CONCLUSIONS: Evidence to support or discourage the use of AP prior to dental procedures as a prevention for IE is very low. New high-quality studies are needed, even though such studies would require big settings and might not be immediately feasible. DOI: 10.1007/s15010-022-01900-0 PMID: PMC9879842 PMID: 35972680 [Indexed for MEDLINE]
- 203. The necessity of administering antibiotic prophylaxis to patients with diabetes mellitus prior to oral surgical procedures—a systematic review.** *Diabetes Metab Syndr*. 2022 Oct;16(10):102621. doi: 10.1016/j.dsx.2022.102621. Epub 2022 Sep 24. Sykara M(1), Maniatakos P(2), Tentolouris A(3), Karoussis IK(1), Tentolouris N(4). BACKGROUND AND AIMS: Many studies suggest the use of antibiotic prophylaxis (AP) as an appropriate preventive measure for patients with diabetes mellitus (DM) due to the increased possibility of an impaired wound healing and infections after surgical procedures in the oral cavity. Existing recommendations regarding antibiotic prophylaxis before surgical procedures are not definitive and are based on expert opinions. The purpose of this study was to review the available scientific data about the necessity of administering AP as a preventive measure prior to oral surgical procedures. METHOD: PubMed®, Scopus® και Cochrane Central Register of Controlled Trials (CENTRAL) were used as databases to search for published research. All articles were initially identified and classified based on the title and subsequently on their abstract. For the next level the full scientific paper was read and evaluated. RESULTS: Overall, 22 articles were included in the study, of which 2 were systematic reviews, 2 cohort studies, 2 case-control studies, 1 case series, 8 case reports and 7 professional association publications. CONCLUSIONS: In the scientific literature, there is a wide range of recommendations and inconsistency regarding the need to administer AP prior to surgical dental operations in patients with DM, while there is no scientific evidence demonstrating its' effectiveness as a precautionary measure. Both blood glucose level measurements and recent HbA1c measurement should be evaluated before any dental procedure. Poor regulation may result to life-threatening infections after tooth extraction. AP is recommended prior to the placement of dental implant. Randomized, controlled, clinical trials with large number of participants and greater variety of surgical dental procedures are needed. DOI: 10.1016/j.dsx.2022.102621 PMID: 36183455 [Indexed for MEDLINE]
- 204. Infective endocarditis following invasive dental procedures: IDEA case-crossover study.** *Health Technol Assess*. 2022 May;26(28):1-86. doi: 10.3310/NEZW6709. Thornhill MH(1)(2), Crum A(3), Rex S(3), Campbell R(3), Stone T(3), Bradburn M(3), Fibisan V(3), Dayer MJ(4), Prendergast BD(5), Lockhart PB(2), Baddour LM(6), Nicholl J(3). BACKGROUND: Infective endocarditis is a heart infection with a first-year mortality rate of ≈ 30%. It has long been thought that infective endocarditis is causally associated with bloodstream seeding with oral bacteria in ≈ 40-45% of cases. This theorem led guideline committees to recommend that individuals at increased risk of infective endocarditis should receive antibiotic prophylaxis before undergoing invasive dental procedures. However, to the best of our knowledge, there has never been a clinical trial to prove the efficacy of antibiotic prophylaxis and there is no good-quality evidence to link invasive dental procedures with infective endocarditis. Many contend that oral bacteria-related infective endocarditis is more likely to result from daily activities (e.g. tooth brushing, flossing and chewing), particularly in those with poor oral hygiene. OBJECTIVE: The aim of this study was to determine if there is a temporal association between invasive dental procedures and subsequent infective endocarditis, particularly in those at high risk of infective endocarditis. DESIGN: This was a self-controlled, case-crossover design study comparing the number of invasive dental procedures in the 3 months immediately before an infective endocarditis-related hospital admission with that in the preceding 12-month control period. SETTING: The study took place in the English NHS. PARTICIPANTS: All individuals admitted to

hospital with infective endocarditis between 1 April 2010 and 31 March 2016 were eligible to participate. INTERVENTIONS: This was an observational study; therefore, there was no intervention. MAIN OUTCOME MEASURE: The outcome measure was the number of invasive and non-invasive dental procedures in the months before infective endocarditis-related hospital admission. DATA SOURCES: NHS Digital provided infective endocarditis-related hospital admissions data and dental procedure data were obtained from the NHS Business Services Authority. RESULTS: The incidence rate of invasive dental procedures decreased in the 3 months before infective endocarditis-related hospital admission (incidence rate ratio 1.34, 95% confidence interval 1.13 to 1.58). Further analysis showed that this was due to loss of dental procedure data in the 2-3 weeks before any infective endocarditis-related hospital admission. LIMITATIONS: We found that urgent hospital admissions were a common cause of incomplete courses of dental treatment and, because there is no requirement to record dental procedure data for incomplete courses, this resulted in a significant loss of dental procedure data in the 2-3 weeks before infective endocarditis-related hospital admissions. The data set was also reduced because of the NHS Business Services Authority's 10-year data destruction policy, reducing the power of the study. The main consequence was a loss of dental procedure data in the critical 3-month case period of the case-crossover analysis (immediately before infective endocarditis-related hospital admission), which did not occur in earlier control periods. Part of the decline in the rate of invasive dental procedures may also be the result of the onset of illness prior to infective endocarditis-related hospital admission, and part may be due to other undefined causes. CONCLUSIONS: The loss of dental procedure data in the critical case period immediately before infective endocarditis-related hospital admission makes interpretation of the data difficult and raises uncertainty over any conclusions that can be drawn from this study. FUTURE WORK: We suggest repeating this study elsewhere using data that are unafflicted by loss of dental procedure data in the critical case period. TRIAL REGISTRATION: This trial is registered as ISRCTN11684416. FUNDING: This project was funded by the National Institute for Health and Care Research (NIHR) Health Technology Assessment programme and will be published in full in Health Technology Assessment; Vol. 26, No. 28. See the NIHR Journals Library website for further project information. DOI: 10.3310/NEZW6709 PMCID: PMC9376800 PMID: 35642966 [Indexed for MEDLINE]

- 205. Do antibiotics prevent infection after third molar surgery? A network meta-analysis.** *Int J Oral Maxillofac Surg.* 2022 Sep;51(9):1226-1236. doi: 10.1016/j.ijom.2022.04.001. Epub 2022 May 5. Falci SGM(1), Galvão EL(2), de Souza GM(2), Fernandes IA(2), Souza MRF(2), Al-Moraissi EA(3). The aim of this systematic review was to determine whether antibiotics, compared to placebo, can prevent infection or dry socket after third molar surgery. A systematic review and network meta-analysis (NMA) was performed following registration of the protocol (CRD42021276266). Four databases and the grey literature were searched, and papers were selected based on the PICOS question. RoB 2 and GRADE were used to evaluate the risk of bias and certainty of the evidence, respectively. The NMA was performed using Stata. Of 58 randomized clinical trials identified, 34 were included in the NMA. Patients treated with amoxicillin (relative risk (RR) 0.56, 95% confidence interval (CI) 0.38-0.84; low quality of evidence) and those treated with metronidazole (RR 0.51, 95% CI 0.31-0.84; low quality of evidence) showed a lower risk of infection and dry socket when compared to patients given a placebo. Postoperative amoxicillin (750 mg) and amoxicillin plus clavulanate (500 mg + 125 mg, or 2000 mg + 125 mg), and preoperative metronidazole (800 mg) are useful to prevent infection or dry socket when compared to placebo. The low rate of infection after third molar surgery, the correct concept of antibiotic prophylaxis, and antibiotic resistance must be taken into account when choosing to treat healthy patients undergoing third molar surgery with antibiotics. DOI: 10.1016/j.ijom.2022.04.001 PMID: 35527115 [Indexed for MEDLINE]
- 206. Preventive antibiotic therapy in bone augmentation procedures in oral implantology: A systematic review.** *J Stomatol Oral Maxillofac Surg.* 2022 Feb;123(1):74-80. doi: 10.1016/j.jormas.2021.01.011. Epub 2021 Jan 22. Salgado-Peralvo AO(1), Mateos-Moreno MV(2), Velasco-Ortega E(3), Peña-Cardelles JF(4), Kewalramani N(5). INTRODUCTION: Since the beginning of Oral Implantology, preventive antibiotic therapy has been routinely prescribed. However, at present, due to the growing appearance of antimicrobial resistance, its use has been questioned, generating a great debate and an emerging controversy. The present systematic review aims to analyze the scientific literature to determine whether the preventive prescription of antibiotics in augmentation procedures with the insertion of implants in one or two phases decreases the incidence of postoperative infections and/or the survival rate of the implants. MATERIAL AND METHODS: The MEDLINE database was searched (via PubMed) with the following keywords: (bone grafting OR alveolar ridge augmentation OR bone graft augmentation OR guided bone regeneration OR bone block) AND (dental implants OR dental implant OR oral implantology) AND (antibiotic prophylaxis OR antibiotics). The criteria used were those described by the PRISMA® Statement. The search was limited to randomised clinical trials, systematic reviews and meta-analyses published in the last 15 years (2005-2020). RESULTS: After reading the titles and abstracts of the resulting articles, only one systematic review meeting the described criteria and 4 randomised clinical trials were included. CONCLUSIONS: Prescription of 2 or 3 g of amoxicillin one hour before surgery is recommended to reduce the early failure rate of one-stage implants and to decrease the bacterial load of grafted bone particles in bone augmentation procedures with one or two-stage implants. DOI: 10.1016/j.jormas.2021.01.011 PMID: 33493687 [Indexed for MEDLINE]
- 207. Antibiotic Prophylaxis for Prosthetic Joint Patients Undergoing Invasive Dental Procedures: Time for a Rethink?** *J Arthroplasty.* 2022 Jul;37(7):1223-1226. doi: 10.1016/j.arth.2022.02.014. Epub 2022 Feb 11. Springer BD(1), Baddour LM(2), Lockhart PB(3),

Thornhill MH(4). BACKGROUND: In the United States, it has been common practice to recommend that dentists provide antibiotic prophylaxis (AP) before invasive dental procedures (IDPs) to prevent late periprosthetic joint infections (LPIs) in patients who have prosthetic arthroplasties despite lack of evidence for a causal relationship between IDP and LPI and a lack of evidence for AP efficacy. METHODS: A recent study quantified the IDP incidence over the 15-month period prior to LPI hospital admissions in the United Kingdom for which dental records were available. A case-crossover analysis compared IDP incidence in the 3 months before LPI admission with the preceding 12 months. The English population was used because guidelines do not recommend AP and any relationship between IDPs and LPI should be fully exposed. RESULTS: No significant positive association was identified between IDPs and LPI. Indeed, the incidence of IDPs was lower in the 3 months before LPI hospital admission than that in the preceding 12 months. CONCLUSION: In the absence of a significant positive association between IDPs and LPI, there is no rationale to administer AP before IDPs in patients with prosthetic joints, particularly given the cost and inconvenience of AP, the risk of adverse drug reactions, and the potential for unnecessary AP use that promotes antibiotic resistance. These results should reassure orthopedic surgeons and their patients that dental care of patients who have prosthetic joints should focus on maintaining good oral hygiene rather than on recommending AP for IDPs. Moreover, it should also reassure those in other countries where AP is not recommended that such guidance is sufficient. DOI: 10.1016/j.arth.2022.02.014 PMID: 35158002 [Indexed for MEDLINE]

**208. Quantifying the risk of prosthetic joint infections after invasive dental procedures and the effect of antibiotic prophylaxis.** J Am Dent Assoc. 2023 Jan;154(1):43-52.e12. doi: 10.1016/j.adaj.2022.10.001. Epub 2022 Dec 2. Thornhill MH, Gibson TB, Pack C, Rosario BL, Bloemers S, Lockhart PB, Springer B, Baddour LM. BACKGROUND: Dentists face the expectations of orthopedic surgeons and patients with prosthetic joints to provide antibiotic prophylaxis (AP) before invasive dental procedures (IDPs) to reduce the risk of late periprosthetic joint infections (LPIs), despite the lack of evidence associating IDPs with LPIs, lack of evidence of AP efficacy, risk of AP-related adverse reactions, and potential for promoting antibiotic resistance. The authors aimed to identify any association between IDPs and LPIs and whether AP reduces LPI incidence after IDPs. METHOD: The authors performed a case-crossover analysis comparing IDP incidence in the 3 months immediately before LPI hospital admission (case period) with the preceding 12-month control period for all LPI hospital admissions with commercial or Medicare supplemental or Medicaid health care coverage and linked dental and prescription benefits data. RESULTS: Overall, 2,344 LPI hospital admissions with dental and prescription records (n = 1,160 commercial or Medicare supplemental and n = 1,184 Medicaid) were identified. Patients underwent 4,614 dental procedures in the 15 months before LPI admission, including 1,821 IDPs (of which 18.3% had AP). Our analysis identified no significant positive association between IDPs and subsequent development of LPIs and no significant effect of AP in reducing LPIs. CONCLUSIONS: The authors identified no significant association between IDPs and LPIs and no effect of AP cover of IDPs in reducing the risk of LPIs. PRACTICAL IMPLICATIONS: In the absence of benefit, the continued use of AP poses an unnecessary risk to patients from adverse drug reactions and to society from the potential of AP to promote development of antibiotic resistance. Dental AP use to prevent LPIs should, therefore, cease. DOI: 10.1016/j.adaj.2022.10.001 PMID: 36470690 [Indexed for MEDLINE]

**209. Is perioperative antibiotic prophylaxis in the case of routine surgical removal of the third molar still justified? A randomized, double-blind, placebo-controlled clinical trial with a split-mouth design.** Clin Oral Investig. 2022 Oct;26(10):6409-6421. doi: 10.1007/s00784-022-04597-5. Epub 2022 Jul 6. Kirnbauer B(1), Jakse N(2), Truschnegg A(2), Dzidic I(2), Mukaddam K(3), Payer M(2). INTRODUCTION: Since antimicrobial resistance, caused by various factors including antibiotic overuse and abuse, is a severe challenge, the necessity of perioperative antibiotic prophylaxis for surgical third molar removal remains a contentious topic. This study determined whether perioperative antibiotic prophylaxis can reduce surgical site infections (SSIs), swelling, and pain in the case of surgical removal of wisdom teeth. MATERIAL AND METHODS: A randomized, double-blind, placebo-controlled clinical trial with a split-mouth design. A study medication of 2 g amoxicillin, administered 1 h before the third molar removal, followed by 1.5 g each for the first 3 postoperative days, was compared with placebo medication. The primary outcome variable (SSI), secondary clinical parameters (swelling and trismus), and patient-centered outcome measures (bleeding, swelling, pain, and pain medication intake) were documented until postoperative day 7. Statistical analyses were done with a paired t test, t test for independent samples, Chi-square test, and McNemar test, including effect sizes. RESULTS: Primary outcome SSI, in total 11%, and clinical parameters swelling and trismus were not significantly different between the two groups. The patient-centered outcome measures (bleeding, swelling, and pain) did not significantly differ, except for postoperative bleeding in the EG on day 0. No significant result was found with pain medication intake postoperative on days 0-7. CONCLUSIONS: Perioperative administration of oral antibiotics neither revealed additional benefits in patient-related outcome measures nor reduced postoperative complications compared with the placebo group indicated at routine surgical removal of noninflamed wisdom teeth. CLINICAL RELEVANCE: Taking antimicrobial resistance into account, clear recommendations for administering drugs, particularly antibiotics, are critical in oral surgery. DOI: 10.1007/s00784-022-04597-5 PMID: PMC9525439 PMID: 35792962 [Indexed for MEDLINE]

- 210. Management of initial carious lesions of hypomineralized molars (MIH) with silver diamine fluoride or silver-modified atraumatic restorative treatment (SMART): 1-year results of a prospective, randomized clinical trial.** Clin Oral Investig. 2022 Feb;26(2):2197-2205. doi: 10.1007/s00784-021-04236-5. Epub 2021 Nov 6. Ballikaya E(1), Ünverdi GE(1), Cehreli ZC(2). OBJECTIVES: This study evaluated and compared the effect of silver diamine fluoride (SDF) and silver-modified atraumatic restorative treatment (SMART) sealants for the treatment of initial carious lesions of permanent molars affected by molar incisor hypomineralization (MIH). METHODS: One hundred and twelve hypomineralized permanent molars with ICDAS 1 or 2 lesions were selected in 48 children. The teeth were randomized into SDF and SMART sealant groups (n = 56 teeth/group) in a split-mouth fashion. Hypersensitivity, formation of caries, and enamel breakdown were evaluated in both groups. Hypersensitivity was assessed by Schiff Cold Air Sensitivity Scale (SCASS), and clinical assessments of SMART sealants were performed according to modified USPHS criteria at 1, 6, and 12 months. The data were analyzed statistically using Fisher's exact test, Kaplan-Meier analysis, Mann-Whitney U test, and Friedman test. RESULTS: Twenty-six hypomineralized molars with marked baseline hypersensitivity showed significantly lower SCASS scores at all evaluation periods (p < 0.001). There was no significant difference in hypersensitivity scores between the groups at the repeated applications of SDF at 1, 6, and 12 months. The cumulative survival rates of SMART sealants on occlusal and palatal surfaces were 88.7% and 58.8%, respectively. CONCLUSIONS: In hypomineralized molars, both SDF and SMART sealants showed favorable short-term prevention against dental caries while providing effective desensitization. Marginal discoloration was the most common side effect of the SMART sealants as a result of SDF application. CLINICAL SIGNIFICANCE: Both SDF and SMART sealants showed similar short-term effectiveness as non-aerosol procedures in arresting enamel caries and reducing hypersensitivity in hypomineralized molars. TRIAL REGISTRATION: Clinical Trials Registration Number: NCT03862014. DOI: 10.1007/s00784-021-04236-5 PMCID: PMC8572062 PMID: 34743243 [Indexed for MEDLINE]
- 211. Clinical evidence for professionally applied fluoride therapy to prevent and arrest dental caries in older adults: A systematic review.** J Dent. 2022 Oct;125:104273. doi: 10.1016/j.jdent.2022.104273. Epub 2022 Sep 1. Chan AKY(1), Tamrakar M(1), Jiang CM(1), Tsang YC(1), Leung KCM(1), Chu CH(2). Comment in Evid Based Dent. 2022 Dec;23(4):138-139. OBJECTIVE: To assess the clinical evidence for professionally applied fluoride therapy to prevent and arrest caries in older adults. DATA/SOURCES: Two independent researchers searched the English literature published up to 31st Dec 2021 in five databases (PubMed, Scopus, the Cochrane Library, EMBASE, and Web of Science) for clinical trials with a comparison group on professionally applied fluoride therapy for caries prevention or arrest at older adults aged ≥60 years with any follow-up period. The outcomes were the mean difference in the number of new caries/caries-prevented fraction and caries arrest rate. The Cochrane guidelines were used for the risk of bias assessment. STUDY SELECTION/RESULTS: Five hundred and twenty-seven studies were identified, and seven studies were finally included. Five studies were rated as having 'low risk'. The root caries-prevented fraction of 38% silver diamine fluoride (SDF) solution, 5% sodium fluoride (NaF) varnish, and 1.23% acidulated phosphate fluoride (APF) gel were 25-71%, 64%, and 32%, respectively. Meta-analysis indicated a decrease in the number of new root caries by 0.55 (95% CI: 0.32-0.78; p < 0.001) and an overall proportion of arrested root caries of 42% (95% CI: 33% to 49%; p < 0.001) after receiving 38% SDF application at the 24-month follow-up. CONCLUSIONS: According to the findings, 5% NaF varnish and 1.23% APF gel prevented root caries, whereas 38% SDF solution prevented and arrested root caries in older adults. More well-designed clinical trials should be conducted to investigate various methods in caries prevention and arrest in older adults. CLINICAL SIGNIFICANCE: Preventive measures effective in other age groups may not suit older adults, as caries type and associated risk factors vary. To date, no systematic review has evaluated professionally applied fluoride therapy in older adults. Evidence from clinical trials in older adults could aid clinical practice and public health measures. The International Prospective Register of Systematic Reviews (PROSPERO) registration number: CRD42022307025. DOI: 10.1016/j.jdent.2022.104273 PMID: 36058347 [Indexed for MEDLINE]
- 212. A Review of the Protocol of SDF Therapy for Arresting Caries.** Int Dent J. 2022 Oct;72(5):579-588. doi: 10.1016/j.identj.2022.06.006. Epub 2022 Jul 14. Yan IG(1), Zheng FM(1), Gao SS(2), Duangthip D(1), Lo ECM(1), Chu CH(3). OBJECTIVE: The aim of this work was to review the protocol of the use of silver diamine fluoride (SDF) for arresting caries, specifically the application time. METHOD: Two researchers searched manufacturers' instructions, YouTube videos, and 5 databases (Embase, Medline, PubMed, Scopus, and Web of Science). Manufacturers' instructions, videos from national dental organisations, and peer-reviewed journal articles that published the SDF application protocol in English for arresting caries were selected. RESULTS: The review included 14 protocols from 15 publications from 4 manufacturers, 3 dental associations, and 7 author teams (one team had 2 articles). The American Dental Association and the British Society of Paediatric Dentistry provided their SDF application protocols on YouTube. The American Academy of Paediatric Dentistry and 7 author teams published their protocols in journal articles. Seven publications suggested an SDF application time of 60 seconds. Seven publications suggested a time range of 10 seconds to 240 seconds. Two publications suggested caries excavation, but 4

publications suggested no caries excavation before SDF application. The procedures from at least 5 publications involved protecting the gingiva with petroleum jelly, isolating the carious tooth with cotton rolls, drying the carious lesion with a 3-in-1 syringe, applying SDF solution with a micro brush for 60 seconds, removing excess SDF solution with gauze, and applying fluoride varnish to the SDF-treated lesion. CONCLUSIONS: Although the SDF application protocol is simple and straightforward, the published protocols could be different. Most publications suggested an SDF application time of 60 seconds, which can be long, particularly for young children and older adults. DOI: 10.1016/j.identj.2022.06.006 PMID: PMC9485517 PMID: 35843730 [Indexed for MEDLINE]

**213. The use of silver diamine fluoride in a children's hospital: Critical analysis and action protocol.** Clin Exp Dent Res. 2022 Oct;8(5):1175-1184. doi: 10.1002/cre2.611. Epub 2022 Jul 22. Brunet-Llobet L(1)(2), Auría-Martín B(1), González-Chópita Y(1)(2), Cahuana-Bartra P(1)(2)(3), Mashala El(4), Miranda-Rius J(2)(3). OBJECTIVES: The present critical analysis aims to propose an action protocol for the use of silver diamine fluoride (SDF) in pediatric patients in a hospital setting, especially for those who are currently awaiting hospital dental treatment under general anesthesia. MATERIAL AND METHODS: A literature search was performed in the PubMed/MEDLINE from 2009 to 2021 using the search terms "silver diamine fluoride", "pediatrics silver diamine fluoride", "application silver diamine fluoride", and "AND" - combined with terms: "potassium iodide", "properties", "adverse effects", "early childhood caries", "patient with disability", "management", "special health care needs patient". Articles that recorded the type of teeth, application protocol, the concentration of the product, and possible complications of the treatment were selected. RESULTS: Four hundred and sixteen related articles were obtained, of which 13 were finally chosen on the basis of the search criteria. The age at which the use of SDF was recommended ranged from the first year of life to 12 years, in most cases in primary teeth. The study populations varied in size from 53 to 799 patients. An analysis of the characteristics of SDF and its use in pediatric patients with dental caries was performed. The recommended concentration was 38% SDF, applied twice yearly. The main complication reported was staining. A decision algorithm was designed including SDF as an agent for caries control in patients attending the specific population of our hospital (divided into two groups: healthy children aged 0-4 years and patients with special health care needs (SHCNs) aged 0-18 years). CONCLUSIONS: SDF therapy appears to be effective in the control of caries in pediatric patients. We propose an action protocol for patients with early childhood caries to reduce risk, complications, and the progression of lesions. The protocol is aimed especially at pediatric patients who also have some systemic pathology, disability, SHCNs, and/or behavioral difficulties. DOI: 10.1002/cre2.611 PMID: PMC9562575 PMID: 35869630 [Indexed for MEDLINE]

**214. A 12-Month Randomized Clinical Trial of 38% SDF vs. Restorative Treatment.** JDR Clin Trans Res. 2022 Apr;7(2):135-144. doi: 10.1177/23800844211072741. Epub 2022 Feb 4. Cleary J(1), Al-Hadidi R(2), Scully A(3), Yahn W(4), Zaid Z(5), Boynton JR(6), Eckert GJ(7), Yanca E(8), Fontana M(8). PURPOSE: The aim of this 2-arm, parallel-group, 12-mo randomized clinical trial was to compare the effectiveness of semiannual application of 38% silver diamine fluoride (SDF) versus restorative treatment (RT) to manage cavitated caries lesions in primary teeth in a diverse population of children in Michigan. METHODS: Children aged 2 to 10 y with at least 1 soft cavitated lesion (International Caries Detection and Assessment System 5 or 6) with no pain or signs/symptoms of irreversible pulpitis were recruited and randomly assigned to 2 intervention groups. One random lesion per child received 38% SDF (twice, at a 6-mo interval) or RT. All interventions and assessments were done by calibrated dentists. Primary outcome measures were clinical failure rates: minor (e.g., reversible pulpitis, active/soft lesion or progression, restoration loss or need for replacement/repair, secondary caries) and major (e.g., irreversible pulpitis, abscess, extraction). Parent, child, and provider acceptability was also assessed. RESULTS: Ninety-eight children were enrolled and randomized, with a mean (SD) age of 4.8 y (1.8); 46% were female and their mean dmft + DMFT was 6.3 (3.9). Sixty-nine children were assessed at 12 mo (sample was within the planned 30% attrition rate). There were significantly more teeth with minor failures (SDF = 65%, RT = 23%,  $P \leq 0.001$ ) and major failures (SDF = 13%, RT = 3%,  $P \leq 0.001$ ) in the SDF group than the RT group; 74% of SDF-treated lesions were hard at 12 mo vs. 57% at 6 mo. Providers stated that SDF was easier, faster, and more preferable than RT ( $P \leq 0.001$ ). No significant differences were found in parental satisfaction and acceptability. At 12 mo, children in the RT arm felt significantly ( $P < 0.05$ ) happier with their tooth appearance and stated that their visit to the dentist hurt less. CONCLUSION: At 12 mo, SDF-treated lesions had significantly more minor and major failures than RT, suggesting that SDF-treated teeth need to be closely monitored in a population at high caries risk (ClinicalTrials.gov NCT02601833). KNOWLEDGE OF TRANSFER STATEMENT: The results of this study can be used by clinicians when deciding whether to restore or apply silver diamine fluoride to cavitated lesions in primary teeth. Information on treatment outcomes and parent, child, and provider acceptability can help guide appropriate treatment decisions and need for monitoring. DOI: 10.1177/23800844211072741 PMID: 35120408 [Indexed for MEDLINE]

**215. Silver Diamine Fluoride Protocol for Reducing Preventable Dental Hospitalisations in Victorian Children.** Int Dent J. 2022 Jun;72(3):322-330. doi: 10.1016/j.identj.2021.05.009. Epub 2021 Jul 14. Yawary R(1), Hegde S(2). INTRODUCTION: This study was designed to assess whether a dental caries management protocol combining a single application of 38% silver diamine fluoride (SDF) with comprehensive oral health education will successfully divert high-risk children from dental treatment under

dental general anaesthesia (DGA), arrest active caries in primary teeth, and improve parent-reported child oral health-related quality of life (OHRQoL). METHODS: Children aged 2 to 10 years, who attended two public dental agencies in Victoria, Australia, and were unable to tolerate restorative treatments in the clinic setting, elected to participate in either a 38% SDF intervention protocol or, alternatively, referral for DGA. Follow-up examinations were completed at 6 months to assess caries progression, decayed missing filled tooth index, PUFA index (pulpal involvement, ulceration, fistula, abscess), DGA referral rates, and OHRQoL (Early Childhood Oral Health Impact Scale [ECOHIS]). RESULTS: Of the total sample, 89.5% of children (n = 102) [mean (SD) age, 4.1 (1.0) years] with 401 active carious lesions elected to participate in the 38% SDF protocol; 10.5% (n = 12) of parents opted for referral for treatment under DGA. The proportion of active caries subsequently arrested at follow-up (number of arrested lesions/number of lesions treated) was 0.78 (95% CI, 0.69 to 0.87). There was an 88% reduction in referrals for DGA in eligible children over the 6-month period. The 38% SDF intervention group showed a significant improvement in ECOHIS scores at follow-up (P < .001). DISCUSSION: Adoption of the 38% SDF intervention protocol resulted in a significant reduction in the rate of preventable dental hospitalisations. Most parents opted against referral for DGA. Parent-reported OHRQoL for children improved significantly. DOI: 10.1016/j.identj.2021.05.009 PMID: 34272061 [Indexed for MEDLINE]

**216. Cost-effectiveness analysis of silver diamine fluoride to divert dental general anaesthesia compared to standard care.** Aust Dent J. 2022 Dec;67(4):352-361. doi: 10.1111/adj.12936. Epub 2022 Sep 29. Nguyen TM(1)(2)(3), Tonmukayakul U(1), Hall M(2), Calache H(1)(4). BACKGROUND: The aim is to perform a model-based cost-effectiveness analysis of a silver diamine fluoride (SDF) protocol intervention to divert dental general anaesthesia (DGA) among Victorian children aged 2-10 years. METHODS: Data inputs were based on an Australian single-cohort 2017/18 study. Intervention costs for standard care were derived from two subgroups of children: (1) children who received standard care without DGA, and (2) children who received standard care with DGA. Two scenarios were modelled due to limited post-follow-up data: (1) children receiving SDF had standard care without DGA (base-case scenario), and (2) children receiving SDF did not receive standard care without DGA (alternative scenario). A simple decision-tree model with probabilistic sensitivity analysis (PSA) estimated the incremental costs per diverted DGA. RESULTS: The probability of children requiring specialist referral and offered SDF, but the primary carer opted for DGA is 0.124 (SD 0.034), and the probability of children requiring DGA in standard care is 0.346 (SD 0.036). For both the base-case and alternative scenario, the incremental cost-effectiveness ratio outcome is dominant and their cost-effectiveness being either 74.8% or 100% respectively. CONCLUSIONS: The SDF protocol intervention is cost-effective dental caries management option for young children where referral for DGA is considered. © 2022 Australian Dental Association. DOI: 10.1111/adj.12936 PMID: 36082536 [Indexed for MEDLINE]

**217. Dilute Silver Diamine Fluoride (1:10) Versus Light Cure Calcium Hydroxide as Indirect Pulp Capping Agents in Primary Molars - A Randomized Clinical Trial** J Clin Pediatr Dent. 2022 Jul 1;46(4):273-279. doi: 10.22514/1053-4625-46.4.3. Shafi N(1)(2), Kaur H(1)(3), Choudhary R(1)(4), Yeluri R(1)(5). AIM: To evaluate the clinical and radiographic outcomes of diluted silver diamine fluoride (1:10) and light cure calcium hydroxide as indirect pulp capping agents in primary molars. STUDY DESIGN: Fifty-six primary molars requiring indirect pulp treatment were randomly allocated to two groups: Dilute SDF (one drop of SDF mixed with 9 drops of distilled water giving a 1:10 dilution) and light cure calcium hydroxide. The indirect pulp treatment was followed by glass ionomer cement restoration and all primary molars received stainless steel crown as full coverage restoration. The teeth were followed up both clinically and radiographically at 1,6- and 12-months' time interval using a pre-determined criterion. The results were statistically analyzed using Chi square analysis. The significance level was set at p ≤ 0.05. RESULTS: Overall clinical and radiographic success rate of indirect pulp treatment with SDF was 96% and with light cure calcium hydroxide was 91.6% respectively at the end of 12 months but the difference was not statistically significant (p > 0.05). CONCLUSION: Dilute silver diamine fluoride (1:10) can be advocated as potential indirect pulp capping agent in primary molars with deep carious lesions. DOI: 10.22514/1053-4625-46.4.3 PMID: 36099230 [Indexed for MEDLINE]

**218. Comparison of Clinical Outcomes of Silver-modified Atraumatic Restorative Technique vs Atraumatic Restorative Technique in Primary Teeth: A Randomized Controlled Trial.** J Contemp Dent Pract. 2022 Nov 1;23(11):1140-1145. doi: 10.5005/jp-journals-10024-3437. Mohammed SME(1), Awad SM(2), Wahba AH(2). AIM: To compare the clinical outcomes of silver-modified atraumatic restorative technique (SMART) vs atraumatic restorative technique (ART) in primary teeth. MATERIALS AND METHODS: This study was a randomized clinical trial conducted on 30 children. The study was split-mouth design, so each group was consisted of 30 children. Children aged 3-6 years old of both genders. Communication with the children was established. Gross debris from cavitation was removed. Carious dentin on walls was excavated using spoon excavator and low-speed contra with round or fissure bur. The areas to be treated were isolated with cotton rolls. For ART, glass ionomer cement (GIC) was applied according to the manufacturer's instructions. For silver-modified atraumatic restorative technique (SMART), a protective coating was applied to the lips and skin to prevent a temporary tattoo. Silver diamine fluoride (SDF) was applied carefully using bended micro sponge brush. It was applied directly to only the affected tooth surface. The lesion was dried for 15 seconds with gentle flow of compressed air. After 1 week, GIC was applied according to the manufacturer's instructions. Clinical

evaluation was done for all teeth at 6 and 12 months. The data were collected and then statistically analyzed using the Chi-square test to show the difference between groups. RESULTS: The restoration of the first primary molar with ART restoration alone showed a lower success rate when compared with the restoration with a combination of SDF and ART (SMART technique), with percentages of 70% and 76.67% and 53.33% and 60% after 6 months and 12 months of follow-up, respectively. CONCLUSION: Silver diamine fluoride is successful in arresting dentin caries and can be used to increase the efficacy of the ART technique in primary teeth. CLINICAL SIGNIFICANCE: It is recommended to use SDF as a noninvasive approach to control dentin caries with the ART technique. DOI: 10.5005/jp-journals-10024-3437 PMID: 37073938 [Indexed for MEDLINE]

**219. Twelve-month randomized controlled trial of 38% silver diamine fluoride with or without potassium iodide in indirect pulp capping of young permanent molars.** J Am Dent Assoc. 2022 Dec;153(12):1121-1133.e1. doi: 10.1016/j.adaj.2022.08.008. Epub 2022 Oct 15. Baraka M, Tekeya M, Bakry NS, Fontana M. BACKGROUND: The clinical and radiographic effectiveness of 38% silver diamine fluoride (SDF) with and without potassium iodide (KI) was tested and compared with resin-modified glass ionomer cement (RMGIC) in indirect pulp capping of deep carious lesions in young permanent molars. METHODS: One hundred eight permanent first molars with deep occlusal cavitated carious lesions in 49 children aged 6 through 9 years were randomly allocated into 3 groups (n = 36 molars per group) and treated with SDF plus KI, SDF, and RMGIC. RMGIC was used as a base and a resin-based composite restoration followed. Clinical assessments for secondary caries (primary outcome), postoperative pain, tooth vitality, and restoration success and quality rates according to Modified US Public Health Service and Ryge Criteria for Direct Clinical Evaluation of Restorations were performed after 3, 6, and 12 months. Periapical radiographs were obtained at baseline, 6 months, and 12 months. Outcomes were assessed using mixed effects multilevel logistic and linear regression analyses. RESULTS: There were no significant differences (P = .26) among the groups at all times for secondary caries, postoperative pain, tooth vitality, clinical abscess, radiographic signs of pulpal pathology, restorations' marginal adaptation, anatomic form, and surface roughness. There was a significant difference (P = .03) in restoration color, marginal staining, and luster. The RMGIC group outperformed the 2 SDF groups in color and luster. CONCLUSIONS: The authors did not find differences among the groups in preventing secondary caries or pain or in maintaining pulpal health. The RMGIC group had better restoration color and luster than both SDF groups and better marginal staining than the SDF group. PRACTICAL IMPLICATIONS: The results of this study can help guide treatment decision making regarding use of SDF and SDF plus KI as indirect pulp capping materials in deep cavitated lesions. This clinical trial was registered at ClinicalTrials.gov. The registration number is NCT04236830. DOI: 10.1016/j.adaj.2022.08.008 PMID: 36253166 [Indexed for MEDLINE]

### Oral health management/prevention

**220. Effectiveness of chewable toothbrushes compared to manual toothbrushes in removing dental plaque - A systematic review and meta-analysis.** Indian J Dent Res. 2022 Oct-Dec;33(4):445-451. doi: 10.4103/ijdr.ijdr\_1158\_21. Sharma H(1), Ruikar M(1). OBJECTIVE: Chewable toothbrushes (CT) are considered an effective tool for dental plaque removal; however, their effectiveness is still uncertain compared to Manual toothbrushes (MT). AIM: To evaluate the effectiveness of CT compared to MT in dental plaque removal. METHODS: Studies comparing the efficiency of CT and MT in dental plaque removal measured by Turesky Modification of Quigley-Hein Plaque Index (TMQHI), Quigley-Hein Plaque Index (QHI), or Silness Loe Plaque Index (SLPI) were identified in PubMed, Medline Web of Science, Google Scholar, and the CENTRAL. Results and effect sizes estimate are presented as mean difference, and subgroup analysis is presented separately for non-randomised interventional studies and randomised intervention studies. Risk of bias was assessed using the Cochrane risk of bias tool (ROBINS-I and ROB2 tool). RESULTS: A total of 10 studies were included in the systematic review, whereas six out of 10 studies were included in the meta-analysis. Both CT and MT were effective in plaque reduction over time when compared individually using the TMQHI and SLPI scores. The overall pooled summary showed no difference in CT and MT's dental plaque removal ability when measured using the TMQHI score. Similarly, there was no difference in CT and MT's dental plaque removal ability when measured using the SLPI score. CONCLUSION: There is no significant difference in CT and MT's plaque removal ability. Therefore, CT should only be recommended for children and individuals with a disability or manual dexterity. OBJECTIVE: Chewable toothbrushes (CT) are considered an effective tool for dental plaque removal. DOI: 10.4103/ijdr.ijdr\_1158\_21 PMID: 37006013 [Indexed for MEDLINE]

**221. Dental implant failure rates in patients with self-reported allergy to penicillin.** Clin Implant Dent Relat Res. 2022 Jun;24(3):301-306. doi: 10.1111/cid.13082. Epub 2022 Mar 21. Zahra B(1), Nicholas B(2), Geoffrey R(2), Dina Z(2), Janal MN(3), Stuart F(2). BACKGROUND: In a number of previous studies, patients with reported penicillin allergies have been documented to experience higher rates of dental implant failure than those who had not reported this allergy. The authors of this study aimed to determine whether an increased risk of implant failure is associated with patient-reported penicillin allergy and which antibiotic was administered. METHODS AND MATERIALS: A retrospective study was conducted through chart review of patients who received dental implants at the New York University College of Dentistry. Participants were eligible if they received one or more dental implants at the College and provided at least 1 year of follow-up data. RESULTS: The overall implant failure rate was 12.9%. The failure rate in patients who reported no allergy to penicillin and took amoxicillin was 8.4%, while the failure rate in

the allergy-reporting group was 17.1% (adjusted OR = 2.22, 95% CI = 1.44-3.44). The failure rate in allergy-reporting patients who took Clindamycin was also higher than in those who took amoxicillin (19.9%; adjusted OR = 2.9, 95% CI = 1.77-4.47) or any antibiotic other than amoxicillin (20.9%; adjusted OR = 2.77, 95% CI = 1.77-4.32). CONCLUSIONS: Significant findings included a lower implant failure rate in patients taking amoxicillin than in patients taking other antibiotics. There was a significant increase in early implant failure in allergy reporting patients. DOI: 10.1111/cid.13082 PMID: 35313065 [Indexed for MEDLINE]

**222. Long-term caries prevention of dental sealants and fluoride varnish in children with autism spectrum disorders: a retrospective cohort study.** Sci Rep. 2022 May 19;12(1):8478. doi: 10.1038/s41598-022-12176-7. Balian A(#)(1), Campus G(#)(2)(3)(4), Bontà G(5), Esteves-Oliveira M(2), Salerno C(5), Cirio S(5), D'Avola V(5), Cagetti MG(#)(5). The aim was to compare two strategies for caries prevention in children with Autism Spectrum Disorders (ASDs). Participants were retrospectively retrieved and divided in two groups. Group one had first permanent molars treated with fluoride varnishes, FA group (n = 92, 9.43 ± 2.44 years) whilst the second, with dental sealant plus fluoride varnishes, FA + S group (n = 140, 7.77 ± 2.57 years). Logistic and multivariate analysis were run to evaluate the caries incidence, the retention rate of sealants, and background factors associated with caries risk over a period of at least 11 years. Survival rates from dental caries were statistically significantly higher in the FA + S group compared to the FA group (LogRank test p < 0.01). Dental sealant plus fluoride varnish played as a protective factor towards the development of caries (HR = 0.25 95%CI = 0.00/0.55 and HR = 0.34 95%CI = 0.00/0.66 in the upper right and left first molars; HR = 0.32 95%CI = 0.00/0.66 and HR = 0.26 95%CI = 0.00/0.58 in the lower right and left first molars). Dental sealants retention rate was high, ranging between 58.02% and 64.29%. No baseline variable was statistically significantly associated to the risk of caries development. Combined dental sealant and fluoride varnish application was more effective in reducing caries risk in first permanent molars of ASDs children than fluoride varnish alone. This preventive strategy should be therefore routinely applied in high caries risk patients as ASDs children. DOI: 10.1038/s41598-022-12176-7 PMID: 35589819 [Indexed for MEDLINE]

**223. Use of a powered toothbrush to improve oral health in individuals with mild cognitive impairment.** Gerodontology. 2023 Mar;40(1):74-82. doi: 10.1111/ger.12619. Epub 2022 Jan 22. Flyborg J(1), Renvert S(1)(2), Sanmartin Berglund J(1), Anderberg P(1)(3). OBJECTIVES: The aim of the study is to investigate whether the use of a powered toothbrush could maintain oral health by reducing the dental plaque (PI), bleeding on probing (BOP), and periodontal pocket depth (PPD) ≥4 mm in a group of individuals with MCI and also if changes in oral health affect various aspects of quality of life. BACKGROUND: People with cognitive impairment tend to have poor oral hygiene and poorer Quality of life. In the present study, the participants were asked to use a powered toothbrush for at least 2 min morning and evening and no restrictions were given against the use of other oral care products. The participant survey conducted at each examination demonstrated that 61.2% of participants at baseline claimed to have experience of using a powered toothbrush, 95.4% at 6 months and 95% after 12 months. At the same time, the use of manual toothbrushes dropped from 73.3% to 44.7% from baseline to the 12-month check-up. This shows that several participants continue to use the manual toothbrush in parallel with the powered toothbrush, but that there is a shift towards increased use of the powered toothbrush. Removal of dental biofilm is essential for maintaining good oral health. We investigated whether using a powered toothbrush reduces the presence of dental plaque, bleeding on probing and periodontal pockets ≥4 mm in a group of older individuals with mild cognitive impairment. MATERIALS AND METHODS: Two hundred and thirteen individuals with the mean age of 75.3 years living without official home care and with a Mini-Mental State Examination (MMSE) score between 20 and 28 and a history of memory problems in the previous six months were recruited from the Swedish site of a multicenter project, Support Monitoring And Reminder Technology for Mild Dementia (SMART4MD) and screened for the study. The individuals received a powered toothbrush and thorough instructions on how to use it. Clinical oral examinations and MMSE tests were conducted at baseline, 6 and 12 months. RESULTS: One hundred seventy participants, 36.5% women and 63.5% men, completed a 12-month follow-up. The use of a powered toothbrush resulted, for the entire group, in a significant decrease in plaque index from 41% at baseline to 31.5% after 12 months (P < .000). Within the same time frame, the values for bleeding on probing changed from 15.1% to 9.9% (P < .000) and the percentage of probing pocket depths ≥4 mm from 11.5% to 8.2% (P < .004). The observed improvements in the Oral Health Impact Profile 14 correlate with the clinical improvements of oral health. CONCLUSION: The use of a powered toothbrush was associated with a reduction of PI, BOP and PPD over 12 months even among individuals with low or declining MMSE score. An adequately used powered toothbrush maintain factors that affect oral health and oral health-related Quality of Life in people with mild cognitive impairment. DOI: 10.1111/ger.12619 PMID: 35064682 [Indexed for MEDLINE]

**224. Dental Plaque Removal with Two Special Needs Toothbrushes in Patients with Down Syndrome: A Parallel-Group Randomised Clinical Trial of Efficacy.** Oral Health Prev Dent. 2022 Nov 30;20(1):501-508. doi: 10.3290/j.ohpd.b3630331. Fageeh HN, Mansour MA, Fageeh HI, Hummadi A, Khurayzi T, Marran K, Alqunfuthi N, Patil S. PURPOSE: To compare the effectiveness of two varieties of special needs toothbrushes in terms of dental plaque removal and bacterial contamination vs a conventional toothbrush in patients with Down syndrome. MATERIALS AND METHODS: This single-blinded, two-group, randomised clinical trial included 16 patients diagnosed with Down syndrome (age 6-15 years) from various special needs centers located in the

Jazan Province of Saudi Arabia. The patients were randomly allocated to two groups based on the type of special needs toothbrush provided (Collis Curve or superfine nano). The plaque and bleeding indices of the patients in both groups were measured at baseline (T0) and both groups were initially given a conventional toothbrush to use for four weeks. After this period, the plaque and bleeding indices were re-evaluated (T1). The patients were instructed to use the special needs toothbrush for 4 weeks, after which the periodontal indices were re-evaluated (T2). Microbial contamination on the bristles of the special needs brushes was evaluated at T2. RESULTS: No notable changes in the mean plaque and bleeding indices were observed between the two groups at each visit; however, statistically significant reductions were noted between visits in both groups ( $p < 0.05$ ). The CFU scores in cultures from the Collis Curve toothbrush bristles ( $1411.5 \pm 541.1$ ) were higher than those obtained from the superfine nano-toothbrush bristles ( $1118.3 \pm 423.9$ ), but without statistically significant differences. CONCLUSION: The findings indicate that the use of special needs toothbrushes can statistically significantly improve the gingival health status in individuals with Down syndrome in terms of both resolution of periodontal inflammation and reduction of plaque accumulation. DOI: 10.3290/j.ohpd.b3630331 PMID: 36448278 [Indexed for MEDLINE]

## **Cancer**

- 225. Preventive Effect of Probiotics on Oral Mucositis Induced by Cancer Treatment: A Systematic Review and Meta-Analysis.** *Int J Mol Sci.* 2022 Oct 31;23(21):13268. doi: 10.3390/ijms232113268. Liu YC(1), Wu CR(1), Huang TW(2)(3)(4)(5). Oral mucositis is a common adverse effect of cancer therapy. Probiotics have been shown to exert anti-inflammatory and immunomodulatory effects. We performed a meta-analysis of randomized controlled trials (RCTs) to investigate whether probiotics can prevent cancer therapy-induced oral mucositis. We searched PubMed, Embase, Cochrane Library, and ClinicalTrials.gov databases for trials related to probiotics and oral mucositis published before September 2022; no language restrictions were applied. The primary outcome was the incidence of oral mucositis and severe oral mucositis. Secondary outcomes were the requirement for enteral nutrition during treatment, body weight loss, and decreased quality of life. The study has been registered in PROSPERO (number: CRD 42022302339). Eight RCTs, including 708 patients, were reviewed; however, a meta-analysis of only seven trials could be performed. Three trials using Lactobacilli-based probiotics reported that the incidence of oral mucositis in the probiotic group was significantly low (risk ratio [RR] = 0.84, 95% confidence interval [CI] = 0.77–0.93,  $p = 0.0004$ ). Seven trials reported a significantly low incidence of severe oral mucositis in the probiotic group (RR = 0.65, 95% CI = 0.53–0.81,  $p < 0.0001$ ). The requirement of enteral nutrition was significantly low in the probiotic group (odds ratio = 0.34, 95% CI: 0.13–0.92,  $p < 0.05$ ). This study demonstrated the effectiveness of probiotics in the prevention and mitigation of cancer therapy-induced oral mucositis. We recommend the use of probiotics to prevent and treat oral mucositis during cancer therapy. DOI: 10.3390/ijms232113268 PMCID: PMC9656871 PMID: 36362057 [Indexed for MEDLINE]
- 226. Radiotherapy for oral cavity cancers.** *Cancer Radiother.* 2022 Feb-Apr;26(1-2):189-198. doi: 10.1016/j.canrad.2021.11.012. Epub 2021 Dec 23. Lapeyre M(1), Racadot S(2), Renard S(3), Biau J(4), Moreira JF(5), Biston MC(6), Pointreau Y(7), Thariat J(8), Graff-Cailleaud P(9). Intensity modulated radiation therapy and brachytherapy are standard techniques of irradiation for the treatment of oral cavity cancers. These techniques are detailed in terms of indication, planning, delineation and selection of the volumes of interest, dosimetry and patients positioning control. This is an update of the guidelines of the French Society of Radiotherapy Correspondence. DOI: 10.1016/j.canrad.2021.11.012 PMID: 34953711 [Indexed for MEDLINE]
- 227. Dental management in head and neck cancers: from intensity-modulated radiotherapy with photons to proton therapy.** *Support Care Cancer.* 2022 Oct;30(10):8377-8389. doi: 10.1007/s00520-022-07076-5. Epub 2022 May 5. Falek S(1), Regmi R(2), Heralut J(3), Dore M(4), Vela A(5), Dutheil P(5), Moignier C(5), Marcy PY(6), Drouet J(1), Beddok A(7), Letwin NE(8), Epstein J(9), Parvathaneni U(10), Thariat J(11)(12)(13)(14). INTRODUCTION: Despite reduction of xerostomia with intensity-modulated compared to conformal X-ray radiotherapy, radiation-induced dental complications continue to occur. Proton therapy is promising in head and neck cancers to further reduce radiation-induced side-effects, but the optimal dental management has not been defined. MATERIAL AND METHODS: Dental management before proton therapy was assessed compared to intensity-modulated radiotherapy based on a bicentric experience, a literature review and illustrative cases. RESULTS: Preserved teeth frequently contain metallic dental restorations (amalgams, crowns, implants). Metals blur CT images, introducing errors in tumour and organ contour during radiotherapy planning. Due to their physical interactions with matter, protons are more sensitive than photons to tissue composition. The composition of restorative materials is rarely documented during radiotherapy planning, introducing dose errors. Manual artefact recontouring, metal artefact-reduction CT algorithms, dual or multi-energy CT and appropriate dose calculation algorithms insufficiently compensate for contour and dose errors during proton therapy. Physical uncertainties may be associated with lower tumour control probability and more side-effects after proton therapy. Metal-induced errors should be quantified and removal of metal restorations discussed on a case by case basis between dental care specialists, radiation oncologists and physicists. Metallic amalgams can be replaced with water-equivalent materials and crowns temporarily removed depending on rehabilitation potential, dental condition and cost. Implants might contraindicate proton therapy if they are in the proton beam path. CONCLUSION: Metallic restorations may more severely affect

proton than photon radiotherapy quality. Personalized dental care prior to proton therapy requires multidisciplinary assessment of metal-induced errors before choice of conservation/removal of dental metals and optimal radiotherapy. DOI: 10.1007/s00520-022-07076-5 PMID: 35513755 [Indexed for MEDLINE]

**228. Management and work-up procedures of patients with head and neck malignancies treated by radiation.** Cancer Radiother. 2022 Feb-Apr;26(1-2):147-155. doi: 10.1016/j.canrad.2021.10.005. Epub 2021 Dec 22. Grégoire V(1), Boisbouvier S(2), Giraud P(3), Maingon P(4), Pointreau Y(5), Vieillelign L(6). Radiotherapy alone or in association with systemic treatment plays a major role in the treatment of head and neck tumours, either as a primary treatment or as a postoperative modality. The management of these tumours is multidisciplinary, requiring particular care at every treatment step. We present the update of the recommendations of the French Society of Radiation Oncology on the radiotherapy of head and neck tumours from the imaging work-up needed for optimal selection of treatment volume, to optimization of the dose distribution and delivery. DOI: 10.1016/j.canrad.2021.10.005 PMID: 34953696 [Indexed for MEDLINE]

**229. The prevalence of dental developmental anomalies among childhood cancer survivors according to types of anticancer treatment.** Sci Rep. 2022 Mar 16;12(1):4485. doi: 10.1038/s41598-022-08266-1. Halperson E(1)(2), Matalon V(3)(4), Goldstein G(5)(6), Saieg Spilberg S(5)(6), Herzog K(3)(4), Fux-Noy A(3)(4), Shmueli A(3)(4), Ram D(3)(4), Moskovitz M(3)(4). Survival following childhood cancer has increased considerably. In an observational cross-sectional study, we assessed the prevalence of dental developmental anomalies (DDA) among childhood cancer survivors according to types of anticancer treatment. Permanent teeth were examined clinically and radiographically in 121 adolescents with a history of childhood malignancies, to identify DDA, namely hypomineralization or hypoplasia, microdontia, root changes and hypodontia. DDA were observed in 56/121 individuals (46%), in 309/3388 teeth (9%). Hypomineralization or hypoplasia of enamel appeared in 21 (17%) patients. Altered root development appeared in 26 patients and hypodontia affected 13 (10%). Dental anomalies were observed in 36 (43%) individuals who received chemotherapy and not radiation, in 20 (52%) who received radiotherapy, and in 15 (60%) of those who received head and neck radiotherapy. Among patients who received only chemotherapy, young age (6 years or younger) was associated with a higher number of malformed teeth. In conclusion, antineoplastic treatment that combines chemotherapy and radiotherapy appears to increase the risk of DDA. Radiation to the head and neck area was shown to particularly increase the risk of DDA. No specific chemotherapy agent was found to be associated more than the others with DDA. DOI: 10.1038/s41598-022-08266-1 PMCID: PMC8927608 PMID: 35296697 [Indexed for MEDLINE]

**230. Factors affecting the oral health of inpatients with advanced cancer in palliative care.** Support Care Cancer. 2022 Feb;30(2):1463-1471. doi: 10.1007/s00520-021-06547-5. Epub 2021 Sep 16. Furuya J(1)(2), Suzuki H(3), Hidaka R(4), Koshitani N(4), Motomatsu Y(5), Kabasawa Y(6), Tohara H(2), Sato Y(1), Minakuchi S(7), Miyake S(8). 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. DOI: 10.1007/s00520-021-06547-5 PMCID: PMC8727430 PMID: 34529140 [Indexed for MEDLINE]

**231. Long-Term Effect of Anticancer Therapy on Dentition in Childhood Cancer Survivors: An Observational, Cross-Sectional Study.** Indian J Pediatr. 2022 Apr;89(4):327-332. doi: 10.1007/s12098-021-03818-1. Epub 2021 Jun 9. Atif M(1), Mathur VP(2), Tewari N(1), Bansal K(1), Rahul M(1), Bakhshi S(3). Comment in Indian J Pediatr. 2022 Apr;89(4):319-320. OBJECTIVES: To evaluate the presence of developmental dental anomalies, like microdontia, hypodontia, abnormally shaped teeth (AST), and developmental defects of enamel (DDE) in childhood cancer survivors and compare it with the healthy controls. METHODS: This cross-sectional analytical study was conducted in 2 groups: childhood cancer survivors (CCS) group including children (> 12 y, m/f) who had undergone anticancer therapy (ACT) before 8 y of age and healthy control group (> 12 y, m/f) without any systemic disease. Pearson chi-square test was used to analyze the difference between the CCS group and the control group for microdontia, hypodontia, AST, DDE and for intragroup analysis in CCS group. Odds ratio was also calculated. RESULTS: A total of 120 and 121 children were included in CCS and control group, respectively. The prevalence of microdontia, hypodontia, abnormally shaped

teeth, and DDE was 17.5% (21), 5% (6), 8.33% (10), and 37.5% (45), respectively in CCS group. It was 8.2% (10), 2.5% (3), 1.65% (2), and 22.3% (27), respectively in the control group. A statistically significant difference was seen in microdontia ( $p = 0.032$ ), abnormally shaped teeth ( $p = 0.017$ ) and DDE ( $p = 0.01$ ). Higher prevalence was seen when ACT began at an early age.

**CONCLUSION:** An association between developmental dental anomalies and anticancer therapy (ACT) exists with significantly higher difference in microdontia, abnormally shaped teeth and DDE among survivors of childhood cancer as compared to healthy population. These known adverse effects of ACT on developing teeth should be considered during treatment planning of the children having cancers. DOI: 10.1007/s12098-021-03818-1 PMID: 34106443 [Indexed for MEDLINE]

**232. Dental developmental complications in pediatric hematopoietic stem cell transplantation patients: A study using CMC clinical data warehouse.** PLoS One. 2022 Dec 22;17(12):e0279579. doi: 10.1371/journal.pone.0279579. eCollection 2022. Kim J(1), Lim HJ(1), Ku JH(1), Kook YA(1), Chung NG(2), Kim Y(1). **OBJECTIVE:** This study aimed to investigate the prevalence and extent of dental developmental complications in patients who have undergone pediatric hematopoietic stem cell transplantation (SCT) and identify the risk factors. **MATERIALS AND METHODS:** We retrospectively investigated the clinical data warehouse of the Catholic Medical Center information system for identifying patients who: 1) visited the Department of Pediatrics between 2009 and 2019, 2) underwent SCT under the age of 10, and 3) had panoramic radiographs. Thus 153 patients were included in this study. The prevalence and extent of tooth agenesis, microdontia, and root malformation were assessed using panoramic radiographs obtained after SCT, and the risk factors were analyzed using regression analysis. **RESULTS:** All 153 patients had at least one dental anomaly. When grouped according to the age at initial chemotherapy ( $\leq 2.5$ ; 2.6-5.0; 5.1-7.5;  $> 7.5$  years), the prevalence of agenesis showed statistically significant differences among the different age groups ( $P < 0.001$ ). The prevalence of agenesis was highest in the youngest age group. As the initial age at chemotherapy increased, the number of affected teeth per patient decreased for all three anomalies. The location of the affected tooth was also influenced by the age at initial chemotherapy. Regression analysis demonstrated that young age at initial chemotherapy was a risk-increasing factor for tooth agenesis and microdontia. **CONCLUSIONS:** The age at initial chemotherapy may be a critical factor in determining the type, extent, and location of dental complications after SCT. These results suggest that careful dental follow-up and timely treatment are recommended for pediatric patients undergoing SCT. DOI: 10.1371/journal.pone.0279579 PMID: 36548286 [Indexed for MEDLINE]

**233. Association between oral health and advisability of oral feeding in advanced cancer patients receiving palliative care: a cross-sectional study.** Support Care Cancer. 2022 Jul;30(7):5779-5788. doi: 10.1007/s00520-022-06984-w. Epub 2022 Mar 28. Furuya J(1)(2), Suzuki H(3), Hidaka R(4), Matsubara C(5), Motomatsu Y(6), Kabasawa Y(7), Tohara H(2), Sato Y(1), Miyake S(8), Minakuchi S(5). **PURPOSE:** Maintenance of oral feeding is important in terms of maintaining and improving the quality of life in terminal cancer patients receiving palliative care. Although adequate oral health status is essential for oral feeding in hospitalized patients, the relationship between oral health and oral feeding in patients receiving palliative care remains unclear. This cross-sectional study aimed to examine how the general condition and oral health status of these patients relate to decisions regarding their nutritional intake methods. **METHODS:** This retrospective cross-sectional study included 103 terminal cancer patients (59 men and 44 women; mean age,  $73.8 \pm 10.9$  years) who received palliative care between April 2017 and August 2019. The nutritional method was assessed using the Functional Oral Intake Scale (FOIS). We assessed two types of nutritional methods: (1) the method advised by the attending physician until the initial dental examination (FOIS-I) and (2) the recommended method based on consultation with a palliative care doctor and dentist after the initial oral examination (FOIS-R). Furthermore, the participants' basic information and Dysphagia Severity Scale (DSS) and Oral Health Assessment Tool (OHAT) scores were assessed. **RESULTS:** There was a divergence between FOIS-I and FOIS-R. FOIS-R was significantly higher than FOIS-I ( $p < 0.001$ ). Multiple regression analysis revealed that the time until death, DSS score, and OHAT score had a significant impact on determining the food form for oral feeding. **CONCLUSIONS:** Appropriate oral health assessment is important in determining the food form and indication for oral feeding among patients receiving palliative care. DOI: 10.1007/s00520-022-06984-w PMID: 35344101 [Indexed for MEDLINE]

**234. Demoralization in oral cancer inpatients and its association with spiritual needs, quality of life, and suicidal ideation: a cross-sectional study.** Health Qual Life Outcomes. 2022 Apr 2;20(1):60. doi: 10.1186/s12955-022-01962-6. Chang TG(1)(2), Huang PC(3), Hsu CY(4), Yen TT(5)(6). **BACKGROUND:** Demoralization is a common problem in oral cancer patients owing to the chronic and severe nature of their affliction. However, the association between demoralization and the patient's spiritual needs, quality of life, and suicidal ideation remains unclear. This study aims to provide insights into possible links between demoralization among oral cancer patients and its effects on the patient's spiritual needs, quality of life, and suicidal ideation. **METHODS:** We examined 155 Taiwanese oral cancer inpatients in Taichung Veterans General Hospital, Taiwan, using the following three rating scales: (a) Demoralization Scale Mandarin Version (DS-MV), (b) Spiritual Interests Related to Illness Tool, and (c) The Taiwan Chinese versions of the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire. Suicidal ideation was established if at least one of the two suicide-related items on the DS-MV scale were checked. We divided the participants into high- and low-demoralization groups, per the cutoff score of 30. We then explored group associations with

sociodemographic features, quality of life, and spiritual needs. Logistic regression and receiver operating characteristic (ROC) curves were used to determine demoralization and its association between these variables. RESULTS: Fifty-five (35.5%) patients were categorized as having high demoralization (DS-MV scale score > 30), with scores for DS-MV for all patients being  $27.2 \pm 16.8$ . The rates of suicidal ideation were 29.1% (16/55) in the high-demoralization group and 2% (2/100) in the low-demoralization group, with an odds ratio (95% confidence interval) of 20.10 (4.41-91.55). Logistic regression analysis revealed significant effects of spiritual needs and global health status on the DS-MV scores ( $p < 0.001$ ). Multivariate analyses further confirmed that only overall quality of life scores < 62.5 and spiritual needs < 3.7 significantly predicted the occurrence of high demoralization. CONCLUSION: High demoralization is associated with low satisfaction with spiritual needs, poor quality of life, and high risk of suicidal ideation. DS-MV may potentially be an effective tool for achieving holistic health care among oral cancer patients. DOI: 10.1186/s12955-022-01962-6 PMID: 35366908 [Indexed for MEDLINE]

**235. Changes in oral function, swallowing function, and quality of life in patients with head and neck cancer: a prospective cohort study.** BMC Oral Health. 2022 Jul 17;22(1):293. doi: 10.1186/s12903-022-02329-5. Ihara Y(1), Kato H(2), Tashimo Y(2)(3), Iizumi Y(2), Fukunishi Y(2), Sato H(3), Shimane T(3), Takahashi K(2). BACKGROUND: Head and neck cancer (HNC) treatment can cause oral morbidities, such as oral dryness and dysphagia, affecting the patient's quality of life (QOL). The relationship between oral functions and QOL in patients with early-stage HNC remains poorly studied. This study aimed to evaluate changes in the QOL of patients with early-stage HNC and identify factors that affect the QOL of these patients. METHODS: In this prospective cohort study, 37 patients who underwent early-stage (Stage I/Stage II) HNC treatment were evaluated for their oral function, swallowing function, and the QOL score at baseline (BL) and 12 months after surgical treatment (12 M). The participants were divided into two groups: patients who returned to the BL QOL score at 12 M (RE;  $n = 26$ ) and those who did not (NR;  $n = 11$ ). RESULTS: In total, 29.7% (11/37) patients with early-stage HNC did not return to the BL QOL score at 12 M. There was no significant difference between the RE and NR groups regarding the oral and swallowing function. Moreover, oral and swallowing function of all patients returned to the BL at 12 M. The NR group showed lower QOL scores than the RE group in the global health status, and "sticky saliva" parameters in the questionnaires. CONCLUSION: Restoration of the oral function is insufficient to improve the QOL of patients with early-stage HNC. The treatment of these patients should instead consider several factors that affect their QOL. DOI: 10.1186/s12903-022-02329-5 PMID: 35843950 [Indexed for MEDLINE]

**236. The association between dental arch length and oral health-related quality of life in head and neck cancer patients post-radiotherapy.** Spec Care Dentist. 2023 Mar;43(2):111-118. doi: 10.1111/scd.12755. Epub 2022 Jul 13. Abed H(1), Reilly D(2), Burke M(3), Sharka R(4), Daly B(5). AIMS: To assess the association between length of dental arch and oral health-related quality of life in head and neck cancer patients post-radiotherapy. METHODS: Thirty head and neck cancer participants reported their oral health-related quality of life using the oral health impact profile-14 instrument and their global self-rating of general and oral health. All patients had received chemotherapy and radiotherapy. The length of dental arch was assessed in three tooth relational categories: canine-to-canine, shortened (premolars to premolars), and long (molars to molars) dental arches. Inclusion of participants for any of the three categories required verification of opposing teeth relationship with Shim Stock paper. RESULTS: Out of 30 head and neck cancer patients, eight (27%) had a canine-to-canine dental arch, 14 (46%) had a shortened dental arch, and eight (27%) had a long dental arch. The median oral health impact profile-14 scores for participants respectively with the canine-to-canine dental arch was six (IQR = 9.25), seven (IQR = 8) for participants with shortened dental arch, and 11 (IQR = 12.5) for participants with long dental arch. There were no significant differences in oral health impact profile-14 scores between the three-tooth relational groups (Kruskal-Wallis  $H = 0.769$ ,  $df = 2$ ,  $P$ -value = .681). Similarly, there were no significant differences between three-tooth relational groups on the self rating of general (Chi-squared = 1.714,  $df = 2$ ,  $P$ -value = .424) and oral health (Chi-squared = 1.393,  $df = 2$ ,  $P$ -value = .498). CONCLUSION: Within the limitations of this study, no association was found between the length of dental arch and oral health-related quality of life in head and neck cancer patients post-radiotherapy. Other factors such as dry mouth, oral mucositis, loss of taste, and trismus should be considered as contributory factors to reduced oral health-related quality of life in head and neck cancer patients post-radiotherapy, particularly in relation to eating difficulties. DOI: 10.1111/scd.12755 PMID: 35830628 [Indexed for MEDLINE]

**237. Medication-related osteonecrosis of the jaw and successful implant treatment in a patient on high-dose antiresorptive medication: A case report.** Clin Exp Dent Res. 2022 Oct;8(5):1059-1067. doi: 10.1002/cre2.620. Epub 2022 Jul 27. Ottesen C(1), Andersen SWM(2), Jensen SS(2)(3), Kofod T(2), Gotfredsen K(1). OBJECTIVES: Oral rehabilitation can be a challenge in patients on high-dose antiresorptive medication (HDAR), especially if the alveolar anatomy has changed due to previous medication-related osteonecrosis of the jaw (MRONJ) resection. In healthy patients, dental implant treatment has found wide acceptance in prosthetic rehabilitation as it increases the patient's oral health-related quality of life. However, it is considered contraindicated in patients on HDAR due to the risk of MRONJ, although a recent feasibility study indicates that implant treatment may indeed be an option in these patients. The aim of the present case report is to illustrate the risk of MRONJ in a patient with cancer on HDAR and to discuss the reasons behind the outcomes of the implant treatment. MATERIALS AND METHODS: A patient with prostate cancer with bone metastases on high-dose denosumab therapy with previous MRONJ had four implants inserted

bilaterally in the maxilla (14, 13, 23, 24). Two identical implant-supported screw-retained cantilever bridges were fabricated. The patient was followed for more than 1 year. RESULTS AND CONCLUSION: Peri-implantitis, and/or MRONJ, was diagnosed around two of the implants (23, 24), probably induced by crestal bone trauma from a healing abutment and/or a misfitting prosthetic reconstruction. A peri-implantitis operation was performed, but without the desired response, and the two implants (23, 24) were later removed in an MRONJ resection. The implants on the other side of the maxilla (14, 13) remained without complications. Dental implant treatment is feasible in patients on HDAR, but comorbidities (e.g., diabetes mellitus) and polypharmacy (e.g., chemotherapy and steroids) may add to the risk of implant failure. Minimal trauma surgery and prosthodontics are crucial to increase the chance of successful healing in an HDAR patient. DOI: 10.1002/cre2.620 PMID: PMC9562562 PMID: 35894761 [Indexed for MEDLINE]

## **Mental Health**

- 238. Mental health and periodontal and peri-implant diseases.** Periodontol 2000. 2022 Oct;90(1):106-124. doi: 10.1111/prd.12452. Epub 2022 Aug 1. Ball J(1), Darby I(2). Mental health disorders, particularly depression and anxiety, affect a significant number of the global population. Several pathophysiological pathways for these disorders have been identified, including the hypothalamic-pituitary-adrenal axis, autonomic nervous system, and the immune system. In addition, life events, environmental factors, and lifestyle affect the onset, progression, and recurrence of mental health disorders. These may all overlap with periodontal and/or peri-implant disease. Mental health disorders are associated with more severe periodontal disease and, in some cases, poorer healing outcomes to nonsurgical periodontal therapy. They can result in behavior modification, such as poor oral hygiene practices, tobacco smoking, and alcohol abuse, which are also risk factors for periodontal disease and, therefore, may have a contributory effect. Stress has immunomodulatory effects regulating immune cell numbers and function, as well as proinflammatory cytokine production. Stress markers such as cortisol and catecholamines may modulate periodontal bacterial growth and the expression of virulence factors. Stress and some mental health disorders are accompanied by a low-grade chronic inflammation that may be involved in their relationship with periodontal disease and vice versa. Although the gut microbiome interacting with the central nervous system (gut-brain axis) is thought to play a significant role in mental illness, less is understood about the role of the oral microbiome. The evidence for mental health disorders on implant outcomes is lacking, but may mainly be through behavioural changes. Through lack of compliance with oral hygiene and maintenance visits, peri-implant health can be affected. Increased smoking and risk of periodontal disease may also affect implant outcomes. Selective serotonin reuptake inhibitors have been linked with higher implant failure. They have an anabolic effect on bone, reducing turnover, which could account for the increased loss. DOI: 10.1111/prd.12452 PMID: PMC9804456 PMID: 35913583 [Indexed for MEDLINE]
- 239. The interplay between cognition, depression, anxiety, and sleep in primary Sjogren's syndrome patients.** Sci Rep. 2022 Aug 1;12(1):13176. doi: 10.1038/s41598-022-17354-1. Goulabchand R(#)(1)(2)(3), Castille E(#)(4)(5), Navucet S(6)(7), Etchecopar-Etchart D(8)(9), Matos A(6)(7), Maria A(4)(10)(5), Gutierrez LA(4)(6)(7), Le Quellec A(4)(5), de Champfleury NM(11)(12), Gabelle A(#)(4)(6)(7), Guilpain P(#)(4)(10)(5). Primary Sjögren's syndrome (pSS) is an autoimmune disease with frequent neurological involvement. Memory complaints are common, but their precise patterns remain unclear. We wanted to characterize patterns of neurocognitive profiles in pSS patients with cognitive complaints. Only pSS patients with memory complaints were included, prospectively. Cognitive profiles were compiled through a comprehensive cognitive evaluation by neuropsychologists. Evaluations of anxiety, depression, fatigue, sleep disorders and quality of life were performed for testing their interactions with cognitive profiles. All 32 pSS patients showed at least borderline cognitive impairment, and 17 (53%) exhibited a pathological cognitive profile: a hippocampal profile (37%), a dysexecutive profile (22%), and an instrumental profile (16%) (possible overlap). Regarding the secondary objectives: 37% of patients were depressed, and 48% exhibited a mild-to-severe anxiety trait. Sleep disorders were frequent (excessive daytime sleepiness (55%), high risk for sleep apnea (45%), and insomnia (77%)). Cognitive impairments could not be explained alone by anxiety, depression or sleep disorders. Fatigue level was strongly associated with sleep disorders. Our study highlights that cognitive complaints in pSS patients are supported by measurable cognitive impairments, apart from frequently associated disorders such as depression, anxiety or sleep troubles. Sleep disorders should be screened. DOI: 10.1038/s41598-022-17354-1 PMID: PMC9343365 PMID: 35915312 [Indexed for MEDLINE]
- 240. Maintaining Mental Health in Oral and Maxillofacial Surgery.** J Oral Maxillofac Surg. 2022 Oct;80(10):1575-1576. doi: 10.1016/j.joms.2022.04.022. Aghaloo T. DOI: 10.1016/j.joms.2022.04.022 PMID: 36195371 [Indexed for MEDLINE]
- 241. Is There a Link between Oropharyngeal Microbiome and Schizophrenia? A Narrative Review.** Int J Mol Sci. 2022 Jan 13;23(2):846. doi: 10.3390/ijms23020846. Martin S(1), Foulon A(2), El Hage W(3), Dufour-Rainfray D(3)(4), Denis F(5)(6)(7). The study aimed to examine the impact of the oropharyngeal microbiome in the pathophysiology of schizophrenia and to clarify whether there might be a bidirectional link between the oral microbiota and the brain in a context of dysbiosis-related neuroinflammation. We selected nine articles including three systemic reviews with several articles from the same research team. Different themes emerged, which we grouped into 5 distinct parts concerning the oropharyngeal phageome, the

oropharyngeal microbiome, the salivary microbiome and periodontal disease potentially associated with schizophrenia, and the impact of drugs on the microbiome and schizophrenia. We pointed out the presence of phageoma in patients suffering from schizophrenia and that periodontal disease reinforces the role of inflammation in the pathophysiology of schizophrenia. Moreover, saliva could be an interesting substrate to characterize the different stages of schizophrenia. However, the few studies we have on the subject are limited in scope, and some of them are the work of a single team. At this stage of knowledge, it is difficult to conclude on the existence of a bidirectional link between the brain and the oral microbiome. Future studies on the subject will clarify these questions that for the moment remain unresolved. DOI: 10.3390/ijms23020846 PMID: PMC8775665 PMID: 35055031 [Indexed for MEDLINE]

**242. Mental Disorders and Oral Diseases: Future Research Directions.** J Dent Res. 2023 Jan;102(1):5-12. doi:

10.1177/00220345221120510. Epub 2022 Sep 8. Joury E(1), Kisely S(2), Watt RG(3), Ahmed N(4), Morris AJ(5), Fortune F(6), Bhui K(7). The poor physical health (including oral health) of people with mental disorders is a global problem. The burden of oral diseases among this group is substantial given their high prevalence and ability to increase the personal, social, and economic impacts of mental disorders. This article summarizes causes of mental disorders and oral diseases, critically reviews current evidence on interventions to reduce the burden of oral diseases in people with mental disorders, and suggests future research directions. The relationship between mental disorders and oral diseases is complex due to the shared social determinants and bidirectional interaction mechanisms that involve interconnected social, psychological, behavioral, and biological processes. Research has, to date, failed to produce effective and scalable interventions to tackle the burden of oral diseases among people with mental disorders. Transformative research and actions informed by a dynamic involvement of biological, behavioral, and social sciences are needed to understand and tackle the complex relationship between mental disorders and oral diseases, as well as inform the design of complex interventions. Examples of future research on complex public health, health service, and social care interventions are provided. The design and testing of these interventions should be carried out in real-world settings, underpinned by the principles of coproduction and systems thinking, and conducted by a transdisciplinary team. We propose this starts with setting research priorities and developing complex intervention theory, which we report to support future research to improve oral health and hence physical and mental health in this disadvantaged group. DOI: 10.1177/00220345221120510 PMID: 36081351 [Indexed for MEDLINE]

**243. Prevalence of dental disorders among people with mental illness: An umbrella review.** Aust N Z J Psychiatry. 2022

Aug;56(8):949-963. doi: 10.1177/00048674211042239. Epub 2021 Aug 30. Choi J(1), Price J(2), Ryder S(2), Siskind D(1)(2), Solmi M(3), Kisely S(1)(2). OBJECTIVE: Psychiatric patients have increased rates of comorbid physical illness. There are less data on dental disease, especially decay, despite risk factors including lifestyle and psychotropic side effects such as xerostomia. We therefore undertook an umbrella review of all meta-analyses on the association between mental illness and oral health. METHODS: We searched PubMed, MEDLINE, PsycINFO, the Cochrane Central Register of Controlled Trials, Embase and CINAHL. Articles were independently assessed. Outcomes were caries, periodontal disease, erosion, and partial or total tooth loss (edentulism), measured where possible with standardised measures such as the mean number of decayed, missing and filled teeth or surfaces. Quality was assessed in line with National Institutes of Health guidelines. RESULTS: We identified 11 meta-analyses. The most information and strongest association was between dental decay and severe mental illness or substance use, as well as erosion and eating disorders. Depressive, anxiety and eating disorders were also associated with caries, but the datasets were small. People with severe mental illness had nearly three times the odds of having lost all their teeth than the general community (odds ratio = 2.81, 95% confidence interval = [1.73, 4.57]) and those with depression between 1.17 and 1.32. Findings for periodontal disease were more equivocal, possibly because of study heterogeneity. CONCLUSION: Mental health clinicians should screen for oral diseases when treating those with mental illness and facilitate referral to affordable dental clinics when indicated. Prevention should be a priority, including the promotion of dental care, as well as the management of xerostomia when psychopharmacologic agents are prescribed. DOI: 10.1177/00048674211042239 PMID: 34461748 [Indexed for MEDLINE]

**244. Psychological risk indicators for peri-implantitis: A cross-sectional study** J Clin Periodontol. 2022 Oct;49(10):980-987. doi:

10.1111/jcpe.13645. Epub 2022 Jun 2. Strooker H(1)(2), de Waal YCM(2), Bildt MM(2)(3). AIM: The aim of this analytical cross-sectional study was to evaluate the association between peri-implantitis and psychological distress, and potentially related/mediating factors such as general health, bruxism, and lifestyle factors. MATERIALS AND METHODS: Patients who received dental implants at a private practice in the Netherlands between January 2011 and January 2014 were recalled on a 5-year clinical and radiographic follow-up examination. Presence of peri-implantitis was examined, and patients completed questionnaires measuring psychological distress (Symptom Checklist [SCL]-90), bruxism, general health, and lifestyle factors. Associations between the self-reported factors and peri-implantitis were analysed with univariate and multivariate logistic regression models. RESULTS: A total of 230 patients (with 347 implants) were included in the analysis. Prevalence of (mild to severe) peri-implantitis was 30% (69 patients). Variables that showed a significant univariable association with peri-implantitis ( $p < .10$ ) were the SCL-90 subdomain depression, smoking, current medical treatment, and lung problems. In the multivariate

regression analysis, depression was the only variable that was significantly associated with peri-implantitis ( $p < .05$ ).

**CONCLUSIONS:** The presence of depressive symptoms is a risk indicator for peri-implantitis. Recognizing the potential negative impact of depressive symptoms may allow for better identification of high-risk patients. DOI: 10.1111/jcpe.13645 PMID: PMC9796085 PMID: 35569030 [Indexed for MEDLINE]

245. **Occlusal problems, mental health issues and non-carious cervical lesions.** *Odontology*. 2022 Apr;110(2):349-355. doi: 10.1007/s10266-021-00658-5. Epub 2021 Sep 27. Nascimento BL(1), Vieira AR(2), Bezamat M(2), Ignácio SA(1), Souza EM(3). Non-carious cervical lesions (NCCLs) are characterized by a loss of hard dental tissue near the cement-enamel junction with multifactorial etiology. The aim of this study was to demonstrate that occlusal factors as attrition, malocclusion, and bruxism, and mental disorders as depression, stress, and anxiety are involved in the etiology of NCCLs. Salivary samples and clinical data of 340 individuals selected from 6,112 participants were obtained from the University of Pittsburgh School of Dental Medicine Dental Registry and DNA Repository project. The affected group was formed by individuals with NCCL (34 females, 34 males, mean age 55.34 years). In addition, the comparison group was formed by individuals without NCCL (136 females, 136 males, mean age 55.14 years). Eleven single-nucleotide polymorphisms (SNPs) previously associated with mental disorders were genotyped and tested for association with NCCLs. When all occlusal factors were combined there was found a significant association with NCCL ( $p = 0.000001$ /adjusted OR 4.38, 95% CI 2.50-7.69). Attrition (OR 3.56, 95% CI 2.00-6.32) and malocclusion (OR 5.09, 95% CI 1.65-15.68) as separate variables showed statistically significant associations with NCCL. There was a significant difference in stress history between the two groups (OR 2.17, 95% CI 1.08-4.39). No associations between NCCLs and the SNPs selected were found. However, when the occlusal factors were analyzed as covariates, associations were found between bruxism and seven of the selected SNPs. Our results suggest that occlusal factors might be associated with NCCLs. DOI: 10.1007/s10266-021-00658-5 PMID: 34568988 [Indexed for MEDLINE]
246. **Body dysmorphic disorder (BDD) in the orthodontic and orthognathic setting: A systematic review.** *J Stomatol Oral Maxillofac Surg*. 2022 Sep;123(4):e145-e152. doi: 10.1016/j.jormas.2021.10.015. Epub 2021 Oct 30. Dons F(1), Mulier D(2), Maleux O(3), Shaheen E(2), Politis C(2). General prevalence of Body Dysmorphic Disorder (BDD), a psychiatric disorder in which patients focus on an imagined body defect not visible to others, varies between 0.7 and 2.5%. Up to 86% present with complaints in the area of teeth or face. Patients with BDD pursue an aesthetic rather than functional recovery, making BDD a possible contraindication to treatment. The aim of this systematic review was to review prevalence of BDD within the orthodontic and/or orthognathic population, to describe diagnostic tools for early detection of patients with BDD and to assess the outcome after treatment. A systematic search was conducted up to November 2020 using PubMed, Embase, Web of Science Core Collection and Cochrane Library. Following the screening of 1423 articles, 5 prospective studies were included. Prevalence of BDD within the orthodontic and orthognathic population varied from 5.2% to 13% (average of 6.2%). Literature showed a trend of higher BDD prevalence within younger, female and single patient population, although results are not conclusive. Questionnaires can be useful for preliminary detection of BDD. General anamnesis with questioning medical or psychiatric history, medication and personal expectations remains very important. Red flags could be previous consultations for the same problem or presence of psychiatric comorbidities. Prospective studies are necessary to map satisfaction of these patients and need for re-interventions after treatment. DOI: 10.1016/j.jormas.2021.10.015 PMID: 34728407 [Indexed for MEDLINE]
247. **Oral health self-care behaviours in serious mental illness: A systematic review and meta-analysis.** *Acta Psychiatr Scand*. 2022 Jan;145(1):29-41. doi: 10.1111/acps.13308. Epub 2021 May 3. Turner E(1)(2), Berry K(1)(2), Aggarwal VR(3), Quinlivan L(1)(2)(4), Villanueva T(5), Palmier-Claus J(6)(7). AIM: To understand the relationship between serious mental illness and oral health self-care behaviours using meta-analytic methods and a narrative synthesis of available literature. METHOD: The review followed the Preferred Reporting Items for Systematic Reviews and Meta-analyses guidelines [PROSPERO reference: CRD42020176779]. Search terms pertaining to serious mental illness and oral health were entered into EMBASE, PsycINFO, Medline and CINAHL. Eligible studies included a sample of people with a serious mental illness and a quantitative measure of an oral health self-care behaviour (eg dental visits, toothbrushing). The Effective Public Health Practice Project tool was utilised to appraise the quality of the literature. Studies in the meta-analysis contained a non-clinical or general population comparator sample. RESULTS: People with a serious mental illness were significantly less likely to visit the dentist (OR 0.46, 95% CI 0.32-0.65,  $p > 0.001$ ) or brush their teeth (OR 0.19, 95% CI 0.08-0.42,  $p < 0.001$ ) when compared to non-clinical comparator samples. Few studies explored other oral health self-care behaviours (eg flossing and mouth washing), but uptake was generally low in people with a serious mental illness. The study quality of included studies was variable. CONCLUSIONS: The research showed a reduced uptake of oral health self-care behaviours in people with a serious mental illness. Suboptimal oral health can negatively impact on physical, social and psychological functioning. Further research is needed to understand the reasons for low rates of oral health self-care behaviours in this population. DOI: 10.1111/acps.13308 PMID: 33862664 [Indexed for MEDLINE]
248. **Periodontal status and the efficacy of the first-line treatment of major depressive disorder.** *Clin Exp Dent Res*. 2022 Feb;8(1):366-373. doi: 10.1002/cre2.492. Epub 2021 Nov 3. Jelavić S(1), Bajić Ž(2), Filipčić IŠ(3), Čulina IJ(4), Filipčić I(5)(6)(7), Aurer A(8). OBJECTIVES: The efficacy of treatment of major depressive disorder (MDD) is not satisfactory. Systemic inflammation

may play an important role in MDD pathogenesis and treatment outcomes. Periodontal disease is the systemic inflammatory condition. Its prevalence may be as high as 45%. We aimed to assess the association of periodontal status with the outcome of 3-month first-line treatment of MDD with selective serotonin reuptake inhibitors. MATERIAL AND METHODS: We performed the prospective cohort study during 2018/2019 at Psychiatric Hospital "Sveti Ivan," Croatia, on a consecutive sample of 43 patients. The outcome was the MDD symptoms severity measured using the Hamilton Depression Rating Scale-17. The periodontal status was indicated by the clinical attachment loss (CAL). RESULTS: Baseline periodontal status had a nonlinear significant and clinically relevant association with the MDD treatment outcome ( $R^2$  change of the quadratic term = 0.12;  $p = 0.027$ ). In patients with good baseline periodontal status the severity of MDD symptoms was significantly improved. When the value of CAL was  $\geq 4.44$  mm, indicating the worse periodontal status, further increase in baseline CAL was associated with the worsening of MDD treatment outcomes independently of the baseline depression severity and 14 sociodemographic and clinical predictors of treatment outcome. CONCLUSIONS: Periodontal healthcare is accessible, and should be utilize in an integrative, multidisciplinary approach not only for the sake of psychiatric patients' quality of life and prevention of periodontal disease, but for the sake of the outcomes of psychiatric treatment as well. DOI: 10.1002/cre2.492 PMID: PMC8874085 PMID: 34729949 [Indexed for MEDLINE]

**249. Periodontal and Dentition Status among Psychiatric Patients in Indore: A Descriptive Cross-sectional Study.** J Contemp Dent Pract. 2022 Dec 1;23(12):1260-1266. doi: 10.5005/jp-journals-10024-3451. Gupta S(1), Rangappa KKG(2), Rani S(3), Ganesh R(4), Kukreja P(5), Kukreja BJ(6). AIM: To assess and record periodontal and dentition status among psychiatric patients using modified WHO Oral Health Assessment form 1997. MATERIALS AND METHODS: A descriptive cross-sectional study was conducted at Sri Aurobindo Institute of Medical Sciences and PG Institute, Indore, among the inpatients and outpatients. Ethical approval for the study was obtained from Institutional Review Board of Sri Aurobindo College of Dentistry. Statistical analysis was done using SPSS, IBM version 20.0. Descriptive statistics was used to find the frequencies, mean, and standard deviation of variables considered in the study. RESULTS: Among all the disorders, schizophrenia subjects had shallow pockets 28 (25.2%) and deep pockets 55 (49.5%). Only 2 (2.6%) study subjects who had major depressive disorder had more than 12 mm loss of attachment (LOA). The highest mean DMFT score was recorded for schizophrenia patients ( $13.0 \pm 7.09$ ). CONCLUSION: The results reveal an unmet need of projecting effective planning and implementation strategies toward the improvement of periodontal and dentition status health of the psychiatric patients. CLINICAL SIGNIFICANCE: The study highlights the importance of incorporating dental health education to psychiatric rehabilitation programs. DOI: 10.5005/jp-journals-10024-3451 PMID: 37125525 [Indexed for MEDLINE]

**250. High prevalence of stress and suicidal ideation in women with temporomandibular disorder: A population-based cross-sectional survey.** Cranio. 2022 Mar;40(2):174-180. doi: 10.1080/08869634.2020.1721174. Epub 2020 Jan 30. Park S(1), Heo HA(1), Yun KI(2), Pyo SW(2). Objective: To investigate the association between temporomandibular disorders (TMD) and psychological factors according to gender in a large representative sample. Methods: Participants provided demographic, socio-economic, and behavioral information and responded to questionnaires assessing mental health status regarding perceived stress, mood disturbance, suicidal ideation, and diagnosis of depression. The association between TMD and its risk factors by gender and the association between psychological factors and TMD were statistically analyzed. Results: In men, perceived stress was highly associated with TMD. However, in women, not only perceived stress but suicidal ideation showed significantly high rates of TMD. The suicidal ideation was significantly associated with TMD in women after controlling confounders. Discussion: Current results provide evidence that TMD is associated with stress in both genders and with suicidal ideation, especially in women. This study has important implications for intense screening and evaluation of suicidal ideation among patients with TMD according to gender. DOI: 10.1080/08869634.2020.1721174 PMID: 31999223 [Indexed for MEDLINE]

**251. A Systematic Review and Meta-Analysis of the Association Between Periodontal Disease and Severe Mental Illness.** Psychosom Med. 2022 Sep 1;84(7):836-847. doi: 10.1097/PSY.0000000000001102. Epub 2022 Jun 28. Cai V(1), Peng Ng C, Zhao J, Siskind D, Kisely S. BACKGROUND: Periodontal disease represents a global public health concern, with a disproportionate burden being borne by vulnerable populations. One such group is people with severe mental illness (SMI), and this study examined whether periodontal health is poorer in people with SMI than the general population. METHODS: We conducted a systematic search for studies published before March 2021 on the periodontal health of people with SMI using the following databases: PubMed, PsycINFO, EMBASE, China National Knowledge Infrastructure, and Chongqing VIP. Outcomes were periodontitis, periodontal disease, and shallow and deep periodontal pockets. Results were compared with the general population. RESULTS: Seventeen studies had sufficient data for a random-effects meta-analysis, consisting of 4404 psychiatric patients and 95,411 controls. SMI was associated with an increased prevalence of periodontitis (odds ratio = 1.97, 95% confidence interval [CI] = 1.15-3.35) compared with the general population. People with SMI had 4.28 the odds of having periodontal disease compared with controls (95% CI = 2.54-7.21). They also had 3.65 the odds of shallow pockets (95% CI = 1.80-7.42) and 2.76 the odds of deep pockets (95% CI = 1.10-6.93). CONCLUSIONS: Our findings highlight the increased prevalence and severity of periodontal disease in people with SMI. Oral health is often considered the gateway to overall health

and should be a public health priority for this population. DOI: 10.1097/PSY.0000000000001102 PMID: 35797566 [Indexed for MEDLINE]

- 252. Effects of sex, age, choice of surgical orthodontic treatment, and skeletal pattern on the psychological assessments of orthodontic patients.** *Sci Rep.* 2022 Jun 1;12(1):9114. doi: 10.1038/s41598-022-12129-0. Hino S(1), Maeda-Iino A(2), Yagi T(1)(3), Nakagawa S(4), Miyawaki S(1). We aimed to examine the effects of sex, age, choice of surgical orthodontic treatment, and skeletal pattern on psychological assessment scores of orthodontic patients before edgewise treatment. They completed the State-Trait Anxiety Inventory (STAI), Beck Depression Inventory (BDI)-II, and the psychological domain of the World Health Organization Quality of Life 26 (Psych-QOL) for assessment of anxiety, depression, and body image, respectively. No significant effects on psychological assessment scores due to sex or age differences were found. Surgical orthodontic treatment patients and patients with skeletal Class III had significantly higher STAI-Trait and/or BDI-II scores and lower Psych-QOL score. Based on the linear mixed-effects model, the choice of surgical orthodontic treatment had a significant effect on the STAI-Trait, BDI-II, and Psych-QOL scores. No significant interaction effect was found between the choice of surgical orthodontic treatment and the skeletal pattern by ANB angle. Patients with skeletal Class I or III who chose surgical orthodontic treatment had higher STAI-Trait and/or BDI-II scores and/or lower body image score, respectively. These results suggest that patients who chose surgical orthodontic treatment, particularly those with skeletal Class I and III, may be more prone to experience anxiety and depression and have body image dissatisfaction. DOI: 10.1038/s41598-022-12129-0 PMCID: PMC9159988 PMID: 35650249 [Indexed for MEDLINE]
- 253. Oral hygiene status and factors related to oral health in hospitalized patients with schizophrenia.** *Int J Dent Hyg.* 2022 Nov;20(4):658-663. doi: 10.1111/idh.12605. Epub 2022 Aug 9. Kurokawa Y(1), Watanabe S(1), Miyabe S(1), Ishibashi K(1)(2), Yamamoto S(1)(3), Goto M(1), Hasegawa S(1), Miyachi H(1), Fujita K(4), Nagao T(1). OBJECTIVE: This study aimed to elucidate the oral hygiene status and the factors associated with poor oral hygiene among patients with schizophrenia. METHODS: The relationships of oral hygiene status (calculus index [CI], debris index [DI]), the mean number of decayed-missing-filled teeth (mean DMFT), and Revised Oral Assessment Guide (ROAG) with related factors (hospitalization, chlorpromazine equivalents [CPZE], age, Barthel Index [BI], frequency of cleaning teeth, and self-oral hygiene ability) among 249 hospitalized schizophrenic patients were investigated. RESULTS: The results for oral hygiene status were as follows: median (range); CI 0.5 (0-6.0), DI 1.7 (0-6.0), ROAG 10.0 (7.0-15.0); and mean DMFT  $21.7 \pm 7.3$ . The average CPZE was  $524.4 \pm 353.6$  mg (mean  $\pm$  SD), and the BI was  $76.4 \pm 30.7$ . There was a negative correlation between BI and DI ( $r = -0.34$ ), and a positive correlation between age and mean DMFT ( $r = 0.57$ ). Male patients tended to have worse oral conditions (ROAG) than females. The least-squares multiple regression analysis revealed that BI for DI, age for mean DMFT, sex for ROAG, and self-oral hygiene ability for CI, DI, and mean DMFT were factors related to oral health status. CONCLUSION: Patients with schizophrenia tended to have poor oral hygiene. BI, being male, and low activities of daily living were associated with poor oral hygiene. Furthermore, advanced age was associated with an increased risk of dental caries. DOI: 10.1111/idh.12605 PMID: 35920084 [Indexed for MEDLINE]
- 254. Barriers and facilitators for dental care among patients with severe or long-term mental illness.** *Scand J Caring Sci.* 2022 Mar;36(1):27-35. doi: 10.1111/scs.12960. Epub 2021 Feb 1. Bjørkvik J(1), Henriquez Quintero DP(2), Vika ME(1), Nielsen GH(3), Virtanen JI(4). BACKGROUND: Persons who struggle with severe or long-term mental illness (SMI) have a higher prevalence of oral health problems than the general population. Obtaining and continuing dental treatment is challenging for this patient group for many reasons, and many drop out of active treatment. Our study aimed to explore perceived barriers to obtaining optimal dental health care for patients with SMI. Further, we sought to identify possible ways to facilitate for providing true access to dental services for this population. METHODS: The study utilised a flexible qualitative design with data collected during ordinary clinical practice in a public dental clinic in Norway. We conducted semi-structured face-to-face interviews with 51 persons with SMI twice: an initial interview before dental treatment and a final one after dental treatment. We applied the thematic analysis method. RESULTS: Thematic analysis revealed two key themes in the participants' experiences of access to dental health services: practical conditions and relationship with the dentist. Patients reported barriers and facilitators for access to care as factors associated with patients (patient factors), with the dentist (dentist factors) and with healthcare services (system factors). CONCLUSIONS: Our study indicates that persons with SMI appreciate oral health and want to obtain needed oral care and dental treatment, but they encounter barriers on several fronts. The participants offered suggestions for how to facilitate attendance and adherence. Our findings suggest that dental healthcare services require reorganisation to meet the needs of patients with SMI. DOI: 10.1111/scs.12960 PMCID: PMC9292278 PMID: 33523487 [Indexed for MEDLINE]
- 255. The journey to becoming trauma-informed - using pilot trauma training data to highlight the role of dental services in supporting patients affected by psychological trauma.** *Br Dent J.* 2022 Dec;233(12):994-997. doi: 10.1038/s41415-022-5318-z. Epub 2022 Dec 16. Gunter E(1), Sevier-Guy LJ(2), Heffernan A(3). Rates of psychological trauma are increasing in the community. Psychological trauma symptoms may prevent patients from being able to access or tolerate dental treatment. The importance of dental teams providing equitable person-centred care by adopting a trauma-informed approach is discussed. One way to support dental services to be trauma-informed is through training staff in psychological trauma. An example from a Scottish

Dental Hospital is provided. Directions for future research are discussed and the next steps in the journey to develop trauma-informed dental services are outlined. DOI: 10.1038/s41415-022-5318-z PMID: PMC9756739 PMID: 36526762 [Indexed for MEDLINE]

**256. A study of the association between psychiatric symptoms and oral health outcomes in a population-based birth cohort at 30-year-old follow-up.** *J Psychosom Res.* 2022 Jun;157:110784. doi: 10.1016/j.jpsychores.2022.110784. Epub 2022 Mar 17. Kisely S(1), Najman JM(2). OBJECTIVE: Most studies of the association between psychiatric disorders and poor oral health have been conducted in clinical settings. Where available, data from community surveys have generally been cross-sectional or considered anxiety and depression as a consequence of poor oral health, not the other way round. This study therefore used a birth cohort to assess the association of mental health, measured both cross-sectionally and longitudinally, and oral health at 30-year follow-up. METHODS: There were 2456 adults with data on dental outcomes and oral health care at 30-year follow-up. Psychiatric morbidity was measured at both 21- and 30-year follow-up using standardised instruments including the Centre for Epidemiological Studies-Depression (CES-D) scale and Composite International Diagnostic Interview (CIDI). RESULTS: At follow-up, 850 participants (34.6%) had undergone a dental extraction for infection or decay, and 810 had experienced significant dental pain over their lifetime. One third had not visited a dental clinic in the previous two years and 40% failed to brush their teeth at least twice daily. On adjusted analyses, dental extraction and pain were significantly associated with psychiatric morbidity cross-sectionally at 30-year follow-up and also longitudinally when psychiatric symptoms were present at both 21 and 30 years old. Several cross-sectional measures of psychiatric morbidity were also associated with frequency of tooth brushing. There were no associations with dental clinic visits. CONCLUSIONS: The study demonstrates there are associations between oral and mental health, which are not limited to clinical settings, but were observed at a population level. DOI: 10.1016/j.jpsychores.2022.110784 PMID: 35325776 [Indexed for MEDLINE]

**257. The Frequency of Temporomandibular Disorders, Surgical Complications, and Self-Reported Mental Health Problems in Orthognathic Patients.** *J Craniofac Surg.* 2022 Oct 1;33(7):2076-2081. doi: 10.1097/SCS.0000000000008579. Epub 2022 Feb 28. Melaluoto E(1), Hjerpe J(2)(3), Stoor P(2), Palotie T(2)(4)(5). OBJECTIVE: To evaluate the frequency of signs and symptoms of temporomandibular disorders (TMD), surgical complications, and patient's self-reported mental health problems during orthognathic treatment. MATERIAL AND METHODS: The clinical records of 145 patients treated with orthognathic treatment were retrospectively studied. Variables regarding occlusal parameters, treatment duration, TMD symptoms, complications, and self-reported mental health status at time points of T0 (beginning of the treatment), T1 (before surgery), and T2 (final examination) were evaluated. The variables were statistically compared with significance level of  $P < 0.05$ . RESULTS: A total of 51% ( $n = 74$ ) of the patients had TMD symptoms at 1 or several time points, women having significantly more TMD signs and symptoms ( $P = 0.002$ ). Temporomandibular disorder signs and symptoms decreased significantly after orthognathic treatment ( $P < 0.001$ ). At least 1 self-reported mental health-related factor during 1 or several time points (T0-T2) was recorded in 17.2% ( $n = 25$ ) of the patients. There was no significant difference in frequency of self-reported mental health problems in patients with TMD signs and symptoms compared with patients without TMD signs and symptoms ( $P > 0.05$ ). The frequency of postoperative complications was 39.3%, being significantly higher after Bilateral Sagittal Split Osteotomy (BSSO, 48.7%). There was no difference in treatment duration of patients with self-reported mental health problems compared with patients without ( $P > 0.05$ ). CONCLUSIONS: In this study population, TMD signs and symptoms seem to be typical both in patients with or without self-reported mental health problems. Women had significantly more TMD symptoms. Orthognathic surgery treatment seems to have a positive effect on TMD signs and symptoms. DOI: 10.1097/SCS.0000000000008579 PMID: 35240673 [Indexed for MEDLINE]

**258. Dietitians' Experiences of Providing Oral Health Promotion to Clients with an Eating Disorder: A Qualitative Study.** *Int J Environ Res Public Health.* 2022 Oct 30;19(21):14193. doi: 10.3390/ijerph192114193. Patterson-Norrie T(1)(2), Ramjan L(1)(3), Sousa MS(1)(2)(4), George A(1)(2)(5). (1) Background: Eating disorders (EDs) can seriously impact oral health, leading to irreversible dental damage. Dietitians play a key role in the care of people with an ED and are well-placed to promote oral health. However, there is currently little understanding of how dietitians perceive their role in this space. This study aimed to explore the perceptions and role of dietitians in providing oral health promotion to their clients in an ED clinical setting. (2) Methods: This descriptive qualitative study used semi-structured interviews to explore the perceptions of 14 registered dietitians practicing across seven states in Australia. Participants were recruited using a combination of purposive and snowball sampling. A hybrid thematic analysis approach was undertaken to identify and describe the key themes generated from the data. (3) Results: Generally, dietitians were insightful and knowledgeable of the oral health issues that clients with an ED may be experiencing. However, dietitians' practices across education, screening, and referrals were inconsistent. Challenges such as inadequate training, unknown referral pathways, and clear guidelines were cited as significant barriers to practice. (4) Conclusions: The results reinforce the need for education and the development of targeted strategies that address challenges to oral health promotion in dietetic practice. DOI: 10.3390/ijerph192114193 PMID: PMC9654250 PMID: 36361071 [Indexed for MEDLINE]

**259. Experiences, Knowledge and Perceptions of Dental Hygienists, in the Treatment of Patients with Post-Traumatic Stress Disorder.**

J Dent Hyg. 2022 Apr;96(2):35-42. Simone CB(1), Smallidge DL(2), Libby L(3), Vineyard J(3). Purpose: Post-traumatic stress disorder (PTSD) is a mental health condition that develops in individuals who have experienced a life-threatening event. Previous research has revealed patients diagnosed with PTSD are at increased risk for temporomandibular disorders and dental anxiety. However, the knowledge level of dental hygienists (DHs), regarding PTSD, and their treatment modifications for these patients is unknown. This study sought to evaluate DHs' knowledge of PTSD, and to understand their approach to treating patients with this condition. Methods: Convenience and purposive sampling techniques were used to recruit actively practicing DHs via social media websites. Data was collected using a previously validated online survey, which assessed participants' knowledge of PTSD, and their approach to care for patients suffering from the condition. Descriptive statistics and a Spearman's Rho analysis were used to analyze the data. Results: A total of 362 participants opened the survey for a 94% completion rate (n=342). Participants estimated that 15% of the adults they treated each week suffered from some form of PTSD. Overall, participants recognized that these patients were at moderate to high risk for dental anxiety (91.8%, n=313), and temporomandibular disorders (88.72%, n=33). However, most participants (58.4%, n=192) had not received any education regarding PTSD or how to care for patients with this condition. Conclusion: Results suggest that education on PTSD and its impact on oral health should be incorporated into the dental hygiene curriculum to better prepare graduates to care for this patient population. Continuing education courses should be developed to focus on the special needs of patients suffering from PTSD, so oral health care providers are able to recognize risk factors for the condition and develop effective treatment approaches for these patients. PMID: 35418494 [Indexed for MEDLINE]

**260. Avoiding psychological (re)traumatisation in dentistry when working with patients who are adult survivors of child sex abuse.**

Br Dent J. 2022 Oct;233(8):666-670. doi: 10.1038/s41415-022-5103-z. Epub 2022 Oct 28. Alyce S(1), Taggart D(2), Montaque I(3), Turton J(4). Introduction Seven percent of the adult population in the UK, including one in six women, report unwanted sexual experiences before the age of 16. The impacts of psychological trauma following child sexual abuse (CSA) creates difficulties for many survivors in accessing dental care due to fears of reminders of abuse, the power imbalance with the dentist and triggered traumatic responses. Aims To analyse and report CSA survivor perspectives of dental care and offer suggestions for practice. Method Qualitative semi-structured interviews of 17 CSA survivors generated data as part of a broader study investigating trust and trustworthiness in survivor-professional relationships. The range of dental interactions and the needs survivors described when receiving dental treatment are presented. Transcripts were analysed using NVivo software and thematic analysis methodology. Results Three main themes were identified: the dental encounter ('it really panics me'); the opportunity to disclose; and choice and control. Conclusion This is the first UK study to present qualitative data from CSA survivors about their experiences of dental care. Survivors wish to access dental care but tailored support is needed to ameliorate reminders of abuse and traumatic stress triggers. Trauma-informed care may address difficulties with treatment if dental staff adopt flexible approaches and work collaboratively with survivors to facilitate relational safety. (Please note, in this paper, 'survivors' refers to those sexually abused as children). DOI: 10.1038/s41415-022-5103-z PMID: 36307712 [Indexed for MEDLINE]

**261. A Qualitative Study Exploring the Barriers and Facilitators for Maintaining Oral Health and Using Dental Service in People with Severe Mental Illness: Perspectives from Service Users and Service Providers.**

Int J Environ Res Public Health. 2022 Apr 5;19(7):4344. doi: 10.3390/ijerph19074344. Mishu MP(1), Faisal MR(1), Macnamara A(2), Sabbah W(3), Peckham E(1), Newbronner L(1), Gilbody S(1)(2), Gega L(1)(2). People with severe mental illness suffer from a high burden of oral diseases, which can negatively impact their physical and mental well-being. Despite the high burden, they are less likely to engage in oral health care including accessing dental services. We aimed to identify both the service users' and service providers' perspective on the barriers and facilitators for maintaining oral health and dental service use in people with severe mental illness. Qualitative exploration was undertaken using dyadic or one-to-one in-depth interviews with service users in the UK with a diagnosis of schizophrenia, schizoaffective disorder or bipolar disorder. Service providers, including mental health and dental health professionals, and informal carers (people identified as family or friend who are not paid carers) were also interviewed. Thematic analysis of the data revealed three main cross-cutting themes at the personal, inter-personal and systems level: amelioration of the problem, using a tailored approach and provision of comprehensive support. The main barriers identified were impact of mental ill-health, lack of patient involvement and tailored approach, and accessibility and availability of dental services including lack of integration of services. The main facilitators identified were service providers' effective communication skills and further support through the involvement of carers. The findings suggest that the integration of dental and mental health services to provide tailored support for overall health and well-being, including the oral health of the patient, can better support people with severe mental illness regarding their oral health needs. DOI: 10.3390/ijerph19074344 PMID: 35410025 [Indexed for MEDLINE]

**262. Risk factors and oral health-related quality of life: A case-control comparison between patients after a first-episode psychosis and people from general population.**

J Psychiatr Ment Health Nurs. 2022 Jun;29(3):430-441. doi: 10.1111/jpm.12820. Epub

2022 Feb 2. Kuipers S(1)(2), Castelein S(2)(3), Barf H(1), Kronenberg L(4), Boonstra N(1)(5). WHAT IS KNOWN ON THE SUBJECT?: Oral health consists of more than having good teeth; it is an important factor in general health and well-being. Despite its importance, oral health care is still largely overlooked in mental health nursing. There is no research available about oral health risk factors and OHRQoL in patients diagnosed with a psychotic disorder (first-episode). WHAT DOES THIS PAPER ADD TO EXISTING KNOWLEDGE?: This study provides insight into the severity of the problem. It demonstrates the differences in risk factors and OHRQoL between patients diagnosed with a psychotic disorder (first-episode) and the general population. A negative impact on OHRQoL is more prevalent in patients diagnosed with a psychotic disorder (first-episode) (14.8%) compared to the general population (1.8%). Patients diagnosed with a psychotic disorder (first-episode) have a considerable increase in odds for low OHRQoL compared to the general population, as demonstrated by the odds ratio of 9.45, which supports the importance of preventive oral health interventions in this group. WHAT ARE THE IMPLICATIONS FOR PRACTICE?: The findings highlight the need for oral health interventions in patients diagnosed with a psychotic disorder (first-episode). Mental health nurses, as one of the main health professionals supporting the health of patients diagnosed with a mental health disorder, can support oral health (e.g. assess oral health in somatic screening, motivate patients, provide oral health education to increase awareness of risk factors, integration of oral healthcare services) all in order to improve the OHRQoL. ABSTRACT: Introduction No research is available about the oral health risk factors and oral health-related quality of life (OHRQoL) in patients diagnosed with a psychotic disorder. Aim To compare oral health risk factors and OHRQoL in patients diagnosed with a psychotic disorder (first-episode) to people with no history of psychotic disorder. Method A case-control comparison (1:2) multivariable linear regression analysis and an estimation of prevalence of impact on OHRQoL. Results Patients diagnosed with a psychotic disorder (first-episode) have lower OHRQoL with more associated risk factors. Of the patients diagnosed with a psychotic disorder (first-episode), 14.8% reported a negative impact on OHRQoL, higher than the prevalence of 1.8% found in people from the general population. Discussion The high prevalence rate of a negative impact on OHRQoL in patients diagnosed with a psychotic disorder (first-episode) shows the importance of acting at an early stage to prevent a worse outcome. Implications for practice The findings highlight the need for oral health interventions in patients diagnosed with a psychotic disorder (first-episode). Mental health nurses, as one of the main health professionals supporting the health of patients diagnosed with a mental health disorder, can support oral health (e.g. assess oral health in somatic screening) in order to improve the OHRQoL. DOI: 10.1111/jpm.12820 PMID: PMC9304272 PMID: 35034403 [Indexed for MEDLINE]

**263. The relationship between traumatic dental injuries and adolescents' non-suicidal self-injury behaviour: A cross-sectional analysis of an East London cohort.** Dent Traumatol. 2023 Apr;39(2):173-178. doi: 10.1111/edt.12806. Epub 2022 Nov 21. Mohd Yani AAB(1)(2), Marcenes W(1)(3), Stansfeld SA(4), Bernabé E(1). BACKGROUND/AIM: Recent reviews of case reports have pointed out a potential connection between non-suicidal self-injury (NSSI) and traumatic dental injuries (TDIs). The aim of this study was to investigate the association of a history of NSSI with TDIs in 15- to 16-year-old adolescents. METHODS: This study analysed cross-sectional data from the Research with East London Adolescents Community Health Survey, a prospective population survey of adolescents attending state schools in East London, England. The history of NSSI was obtained using two items from the Lifestyle and Coping questionnaire (whether they have ever engaged with self-harm and the last time they engaged in such behaviours). The presence of TDIs, increased overjet and inadequate lip coverage were determined through clinical assessments by two trained dentists. Survey logistic regression was fitted to test the association of NSSI with TDIs. Odds ratios (ORs) were adjusted for socio-demographic and clinical characteristics as potential confounders. RESULTS: The lifetime and last-year prevalence of NSSI were 11.9% and 6.7%, respectively, whereas the prevalence of TDIs was 16.5%. Neither the lifetime prevalence of NSSI (OR: 1.02, 95% confidence interval: 0.56-1.85) nor the last-year prevalence of NSSI (OR: 0.76, 95% CI: 0.36-1.61) were associated with TDIs in regression models adjusted for confounders. CONCLUSION: This study did not support an association between history of NSSI and TDIs among adolescents aged 15-16 years old in East London. DOI: 10.1111/edt.12806 PMID: 36409280 [Indexed for MEDLINE]

### **Anxiety/Behavior Supports**

**264. Management strategies for adult patients with dental anxiety in the dental clinic: a systematic review.** Aust Dent J. 2022 Mar;67 Suppl 1(Suppl 1):S3-S13. doi: 10.1111/adj.12926. Epub 2022 Jul 12. Hoffmann B(1), Erwood K(1), Ncomanzi S(1), Fischer V(1), O'Brien D(1), Lee A(2). Anxiety is an adaptive emotional response to potentially threatening or dangerous situations; moderated by the sympathetic nervous system. Dental anxiety is common and presents before, during or after dental treatment. The physiological response includes an increase in heart rate, blood pressure, respiratory rate, and cardiac output. Consequently, extensive distress leads to avoidance of dental treatment and multiple failed appointments, impacting both oral and general health. Dental anxiety can generate a variety of negative consequences for both the dentist and the patient. Evidence-based strategies are essential for mitigating and relieving anxiety in the dental clinic. Psychotherapeutic behavioural strategies can modify the patient's experience through a minimally invasive approach with nil or negligible side effects, depending on patient characteristics, anxiety level and clinical situations. These therapies involve muscle relaxation, guided

imagery, physiological monitoring, utilizing biofeedback, hypnosis, acupuncture, distraction and desensitization. Pharmacological intervention utilizes either relative analgesia (nitrous oxide), conscious intravenous sedation or oral sedation, which can have undesirable side effects, risks and contraindications. These modalities increase the cost and availability of dental treatment. DOI: 10.1111/adj.12926 PMCID: PMC9796536 PMID: 35735746 [Indexed for MEDLINE]

- 265. The Multisensory/Snoezelen Environment to Optimize the Dental Care Patient Experience.** Dent Clin North Am. 2022 Apr;66(2):209-228. doi: 10.1016/j.cden.2021.12.001. Sigal A(1), Sigal M(2). This article provides a brief overview of how the environment can affect behavior and that well-designed spaces can affect how patients handle stress. The application of the Snoezelen multisensory interactive calming strategies and devices that were installed in all facets of a community dental practice are described. These principles of creating a calming dental home improved behavior, cooperation, and satisfaction with care in persons with disabilities and reduced the need for sedation or general anesthesia. It is proposed that the creation of similar clinics with multisensory calming features could improve community access to dental care for persons with special needs. DOI: 10.1016/j.cden.2021.12.001 PMID: 35365274 [Indexed for MEDLINE]
- 266. Qualitative Evaluation of YouTube Videos on Dental Fear, Anxiety and Phobia.** Int J Environ Res Public Health. 2022 Dec 31;20(1):750. doi: 10.3390/ijerph20010750. Wong NSM(1), Yeung AWK(2), McGrath CP(2), Leung YY(1). The aim of this study was to review the health information of dental fear-, dental anxiety-, and dental phobia-related videos on YouTube. The 100 most widely viewed videos for the keywords "dental fear", "dental anxiety", and "dental phobia" were chosen for evaluation. Out of the 300 videos, 145 videos met the inclusion criteria and were analyzed. It was found that most of them were produced by the professions, with a dentist delivering the key messages or with patients giving testimonials. Many etiological factors and symptoms were described. Many pharmacological and non-pharmacological interventions were recommended to the audience, such as sedation and distraction, respectively. However, there was a lack of information on the definition or diagnostic criteria of dental fear, dental anxiety, and dental phobia. Videos with high views had a higher ratio of misleading information. Videos with a dentist being the informant had a similar ratio of misleading information compared to other videos. Without adequate information on how to diagnose, it would be very difficult for the audience to determine if the video content was relevant or useful. The dental profession can work together with psychologists or psychiatrists to produce authoritative videos with accurate content. DOI: 10.3390/ijerph20010750 PMCID: PMC9819845 PMID: 36613071 [Indexed for MEDLINE]
- 267. The Relationship between Dental Fear and Anxiety, General Anxiety/Fear, Sensory Over-Responsivity, and Oral Health Behaviors and Outcomes: A Conceptual Model.** Int J Environ Res Public Health. 2022 Feb 18;19(4):2380. doi: 10.3390/ijerph19042380. Stein Duker LI(1), Grager M(2), Giffin W(1), Hikita N(1), Polido JC(3). Dental fear and anxiety (DFA) is common across the lifespan and represents a barrier to proper oral health behaviors and outcomes. The aim of this study is to present a conceptual model of the relationships between DFA, general anxiety/fear, sensory over-responsivity (SOR), and/or oral health behaviors and outcomes. Two rounds of literature searches were performed using the PubMed database. Included articles examined DFA, general anxiety/fear, SOR, catastrophizing, and/or oral health behaviors and outcomes in typically developing populations across the lifespan. The relationships between the constructs were recorded and organized into a conceptual model. A total of 188 articles were included. The results provided supporting evidence for relationships between DFA and all other constructs included in the model (general anxiety/fear, SOR, poor oral health, irregular dental attendance, dental behavior management problems [DBMP], and need for treatment with pharmacological methods). Additionally, SOR was associated with general anxiety/fear and DBMP; general anxiety/fear was linked to poor oral health, irregular attendance, and DBMP. This model provides a comprehensive view of the relationships between person factors (e.g., general anxiety/fear, SOR, and DFA) and oral health behaviors and outcomes. This is valuable in order to highlight connections between constructs that may be targeted in the development of new interventions to improve oral health behaviors and outcomes as well as the experience of DFA. DOI: 10.3390/ijerph19042380 PMCID: PMC8872083 PMID: 35206566 [Indexed for MEDLINE]
- 268. Dental anxiety and oral health following stroke: a pilot study.** BMC Oral Health. 2022 Dec 3;22(1):568. doi: 10.1186/s12903-022-02618-z. Nangle MR(1), Adams AG(2), Henry JD(3). BACKGROUND: Oral health is often poorer in people living with acquired brain injury relative to non-clinical controls. However, although anxiety disorders become more common following stroke, no study to date has tested whether dental anxiety might contribute to stroke survivors' increased vulnerability to poorer oral health. This pilot study reports the first test of whether the anxiety disturbances that commonly present following stroke extend to dental anxiety, and if dental anxiety in this group is linked to poorer oral health. MATERIALS AND METHODS: First-time stroke survivors (N = 35) and demographically matched controls (N = 35) completed validated measures of dental anxiety, oral health, negative affect, and life satisfaction. RESULTS: Stroke survivors did not differ from controls in their overall levels of dental anxiety or oral health, but uniquely for the stroke group, dental anxiety was strongly associated with poorer oral health, and this effect remained significant even after controlling for negative affect and life satisfaction. CONCLUSION: Stroke survivors who have higher levels of dental-related anxiety may be at increased risk of poorer oral health. DOI: 10.1186/s12903-022-02618-z PMCID: PMC9719661 PMID: 36463139 [Indexed for MEDLINE]

- 269. Acceptability of medical immobilization: Results from a pilot international survey.** Int J Paediatr Dent. 2022 Sep;32(5):693-701. doi: 10.1111/ipd.12948. Epub 2022 Apr 27. Townsend JA(1)(2), Peng J(3), McDaniel JC(1)(2), Casamassimo PS(1)(4). BACKGROUND: Controversy exists on the acceptability of medical immobilization (MI). AIM: To identify regulations, professional conventions, and opinions on the acceptability of MI and to identify practice patterns through a pilot study of members of the International Association of Paediatric Dentistry (IAPD) and their colleagues. DESIGN: A 22-item questionnaire was developed and electronically distributed to 1191 members of the IAPD. RESULTS: Responses were received from 182 dentists in 45 countries. The majority (74.9%) of respondents use MI, and 29.1% use an immobilization device. MI with an immobilization device was reported as professionally acceptable (58.1%) and permitted by medicolegal regulations (70.8%) in their countries of practice. Dentists rated acceptability of MI higher than they perceived parents would overall and perceived MI to be more acceptable by parents for emergency situations and for children with special healthcare needs but 19.8% of respondents found it totally unacceptable in all scenarios. Use and opinions of acceptability varied by geographical location with respondents from North America being more accepting of MI. Most dentists felt that the use of an immobilization device could lead to lasting psychological trauma (72.3%) and violation of the rights of the child (55.4%) but that it improves access to care (58.5%). CONCLUSION: The acceptability of MI remains an area of controversy for paediatric dentists internationally. DOI: 10.1111/ipd.12948 PMID: 34923688 [Indexed for MEDLINE]
- 270. Enhancing special care dentistry with sensory-adapted dental environment: A comparative study.** J Indian Soc Pedod Prev Dent. 2022 Jul-Sep;40(3):246-252. doi: 10.4103/jisppd.jisppd\_199\_22. Kittur S(1), Basappa N(1), Raju OS(1), Naik SV(1), Shagale AM(1). AIM: To compare and evaluate the effect of sensory-adapted dental environment (SADE) and regular dental environment in reducing anxiety levels in children with intellectual disabilities. MATERIALS AND METHODS: This study was carried out in children with mild intellectual disabilities aged 8-13 years. The developmental screening test was utilized in screening and including these children with IQ scores between 52 and 67, and after random allocation, children were subjected to oral prophylaxis in the SADE and regular dental environment. Anxiety levels were assessed at baseline, 5 min, and at the end of the procedure using Venham's anxiety rating scale, pulse rate, and blood pressure values. RESULTS: The data were coded and analyzed using software SPSS (IBM version 22.0) for statistical analysis. Comparison between the groups was done using independent t-test and repeated measured ANOVA for objective assessment of intergroup and intragroup anxiety levels, respectively, and using Mann-Whitney U-test and Friedman's test for subjective assessment of intergroup and intragroup anxiety levels, respectively. CONCLUSION: These findings suggest that SADE significantly decreased anxiety levels and cooperative behavior in children with mild intellectual disability and can be used as an alternative behavior management technique in effectively handling children with intellectual disability. DOI: 10.4103/jisppd.jisppd\_199\_22 PMID: 36260464 [Indexed for MEDLINE]
- 271. BeSiDe time to move behavior support in dentistry from an art to a science: A position paper from the BeSiDe (Behavior Support in Dentistry) Group.** Spec Care Dentist. 2022 Jan;42(1):28-31. doi: 10.1111/scd.12634. Epub 2021 Jul 29. Mac Giolla Phadraig C(1), Newton T(2), Daly B(1), Limeres Posse J(3), Hosey MT(2), Yarascavitch C(4), MacAuley Y(5), Buchanan H(6), Nunn J(1), Freeman R(7), Stirling C(8), Healy O(1), Asimakopoulou K(2). AIMS: To share the need for agreement in terminology around how people are supported to receive dental care. METHOD: In this position paper, we make the case for a shift in behavior support in dentistry from an art to a science. RESULTS: We outline why we need agreement on the definition of behavior support across dentistry, agreement on underlying theory, aims and values, and why we need agreement on terms for specific techniques. CONCLUSIONS: We share how patients and dental teams can benefit through better science, education and practice of dental behaviour support. DOI: 10.1111/scd.12634 PMID: 34323293 [Indexed for MEDLINE]
- 272. Panoramic radiography and patients with disability: a new simple breathing technique to reduce common airspace error.** J Med Radiat Sci. 2022 Jun;69(2):261-266. doi: 10.1002/jmrs.564. Epub 2022 Jan 4. Scott AM(1), Reed WM(2). Patients with intellectual disabilities often fail to follow traditional tongue position instructions for panoramic radiographs resulting in missed pathology or unnecessary further radiation. This simple breathing technique is a new clinical instruction method for panoramic radiography developed to reduce the most common patient position error: patient failure to hold the tongue to the roof of the mouth. The technique is suitable for all patients including young patients and those with intellectual disabilities. The simple breathing technique uses 'tell-show-do' communication methods and does not mention the tongue but utilises the known tongue positions that occur during breathing and swallowing. This simple breathing technique instruction for panoramic radiography uses a demonstration of 'breathe-in, breathe-out, swallow, lips closed and hold still' to reduce the intensity of both the palatoglossal and pharyngeal airspaces on panoramic radiographs. This method, referred in this article as the simple breathing technique, can improve the diagnostic potential of panoramic radiographs and can be used with young children and patients with intellectual disabilities, and this slow breathing technique can help them further relax. DOI: 10.1002/jmrs.564 PMID: 34984850 [Indexed for MEDLINE]
- 273. Picture exchange communication system as a behavior modification technique for oral health assessment in autistic children.** J Clin Pediatr Dent. 2022 Nov;46(6):11-16. doi: 10.22514/jocpd.2022.020. Epub 2022 Sep 11. Renuka P(1), Singh S(2), Rathore

M(2). OBJECTIVE: The aim of this study was to establish a modality for behavioral intervention for dental management in autistic children using Picture Exchange Communication System (PECS). STUDY DESIGN: A prospective interventional study was carried out on 30 autistic children in the age range of 4-18 years diagnosed with mild to moderate grades of autism to evaluate the effectiveness of PECS in improving oral health over a period of 6 months. RESULTS: PECS Phases showed a gradual rise from first to third visit, which was statistically highly significant ( $p < 0.001$ ). Oral Hygiene Index-Simplified (OHI-S) scores improved significantly from first visit and second visit. Definitely substantial correlation was seen between PECS and OHI-S. CONCLUSION: Gradual decrease was observed in OHI-S scores over a period of 6 months, indicating an improvement in the oral hygiene status of autistic children. Gradual progress in Phases of PECS proved to increase cognitive ability of autistic children towards understanding the dental setup related PECS cards. DOI: 10.22514/jocpd.2022.020 PMID: 36624899 [Indexed for MEDLINE]

274. **Behaviour management problems in Finnish children with operated congenital heart disease: a practice-based study.** Eur Arch Paediatr Dent. 2022 Jun;23(3):409-416. doi: 10.1007/s40368-022-00696-9. Epub 2022 Mar 6. Karhumaa H(1)(2), Vähännikkilä H(3), Blomqvist M(4), Pättilä T(4), Anttonen V(5)(6). PURPOSE: This retrospective, practice-based study investigates behaviour management problems (BMPs) in dental care among Finnish children with operated congenital heart disease (CHD). METHODS: All the heart-operated children born between the years 1997 and 1999 were identified in the national ProCardio database ( $n = 570$ ). Primary dental care records were requested from this population and were eventually received from 211 patients. Information on gender, diagnosis, number of heart operations and perioperative care were collected from the ProCardio database, and the CHDs were categorised as shunting/stenotic/complex/other defects. Data on BMP/dental fear, oral conscious sedation, dental general anaesthesia (DGA) and past and present caries indices at 6, 12 and 15 years (d/D, dmft/DMFT) were assessed. RESULTS: Notes on behaviour management problems or dental fear were found in 19% of the study population. BMPs in dental care were more frequent among boys. Children with re-operations, longer post-operative intensive care stay and hospitalisation, and complications had not more BMP than others. Those children diagnosed with syndromes had more BMP often than the rest. Past and present caries experience were significantly associated with BMP, need of oral conscious sedation and DGA. Oral conscious sedation, nitrogen oxide sedation and dental general anaesthesia were used in 17/211, 2/221 and 24/211 CHD patients, respectively. CONCLUSION: Dental caries remains a main factor associated with BMP in the CHD population. Need for oral conscious sedation and DGA were rather common. To maintain a good oral health and to avoid development of BMP, CHD children benefit from focus in health promotion and preventive care. DOI: 10.1007/s40368-022-00696-9 PMID: 35249207 [Indexed for MEDLINE]
275. **Assessment of children's emotions before, during, and after the dental treatment procedure: An emoji-based study.** J Indian Soc Pedod Prev Dent. 2022 Oct-Dec;40(4):417-422. doi: 10.4103/jisppd.jisppd\_414\_22. Davangere Padmanabh SK(1), Ahire S(1), Mulchandani V(1), Upendrabhai MJ(1), Trivedi M(1), Joshi AB(1). BACKGROUND: Emojis are used to communicate emotional content as conversational indicators. Emojis of human faces are unrivaled in communication since they can discern between several basic emotions with great precision while also being universal. AIM: Assessment of children's emotions before, during, and after the dental treatment procedure: An emoji-based study. MATERIALS AND METHODS: A total of 85 children, ranging in age from 6 to 12 years, were separated into four groups. Group 1 required local anesthetic for restoration, while Group 2 required extraction. Pulp treatment was in Group 3 and oral prophylaxis was in Group 4. All groups used an animated emoji scale (AES) to quantify anxiety before, during, and after the dental treatment procedure. RESULTS: There was a statistically significant difference when the mean scores of the four treatment groups were compared before, during, and after the procedure. When Group 2 was compared to Groups 1, 3, and 4 there was a statistically significant difference in the anxiety of the research participant before, during, and after the procedures ( $P = 0.01$ ). Groups 2, 3, and 4 were statistically significant after the treatment procedure ( $P = 0.01$ ). CONCLUSION: The findings of this study suggest that the AES can be a useful tool in tracking a patient's emotions during the dental treatment procedure to initiate appropriate behavior management. DOI: 10.4103/jisppd.jisppd\_414\_22 PMID: 36861559 [Indexed for MEDLINE]
276. **The long-term effect of dental treatment under general anaesthesia or physical restraints on children's dental anxiety and behaviour.** Eur J Paediatr Dent. 2022 Mar;23(1):27-32. doi: 10.23804/ejpd.2022.23.01.05. Zhou F(1), Zhang S(2), Ma W(2), Xiao Y(2), Wang D(2), Zeng S(3), Xia B(2). AIM: Dental anxiety (DA) is a common problem worldwide because it renders dental treatment in children challenging. This study aimed to evaluate the long-term effect of dental treatment under general anaesthesia (GA) or physical restraints (PR) on children's DA and behaviour. METHODS: A total of 103 children were recruited and divided into four groups: the GA group, PR group, cooperative (CO) group, and no experience (NE) group. The face version of the Modified Child Dental Anxiety Scale and modified Venham's Clinical Anxiety and Cooperative Behaviour Rating Scale were used to evaluate the level of DA and behaviour. CONCLUSION: Dental treatment under GA is associated with a higher risk for DA when compared with that under PR in the long term. Increased DA may lead to uncooperative dental behaviour, although the agreement is only moderate. DOI: 10.23804/ejpd.2022.23.01.05 PMID: 35274539 [Indexed for MEDLINE]
277. **Effectiveness of psychological techniques in dental management for children with autism spectrum disorder: a systematic literature review.** BMC Oral Health. 2022 May 6;22(1):162. doi: 10.1186/s12903-022-02200-7. AlBhaisi IN(1), Kumar MST(2),

Engapuram A(2), Shafiei Z(2), Zakaria ASI(3), Mohd-Said S(4), McGrath C(5). BACKGROUND: A rise in the reported numbers of children with Autism Spectrum Disorder (ASD) highlights the need for dental practitioners to be more familiar with the treatment approaches for these special needs children to ensure comfortable, well-accepted and efficient management while in dental office. AIM: This paper aimed to acquire a deeper understanding of some of the innovative and best approaches to managing children with ASD in dental settings. DESIGN: A systematic literature search was performed in PubMed, Scopus, Web of Science, Cochrane databases, and grey literature based on the PRISMA 2020 statement, using main keywords such as: 'management', 'dental', 'children', and 'Autism Spectrum Disorder'. Original full-text papers including randomised controlled trials (RCT) and all other designs of non-randomised controlled studies (NRS) reporting relevant intervention studies in English were included without any publication time limit. The quality of the evidence found eligible for the review were then assessed using the ROB-2 and ROBINS-I tools. Subsequently, the details of management interventions and impact of treatment approaches were compared and discussed. RESULTS: Out of the 204 articles found, 109 unrelated articles were excluded during the initial screening. The full papers of remaining 28 were retrieved and only 15 (7%) articles were eligible to be reviewed; eight RCTs with 'some concerns' and 'high risk' categories particularly concerning their randomisation design, and seven NSRs with 'serious' to 'critical' bias largely due to confounding factors. CONCLUSION: Our review found inconclusive evidence on the strength of recent psychological and non-pharmacological approaches used to manage children with ASD in dental settings. Small sample size and lack of a control group in certain studies affected the strength of evidence and credibility of the findings. Nevertheless, this review shared informative details on some innovative approaches for better understanding of the management of children with ASD for dental professionals. DOI: 10.1186/s12903-022-02200-7 PMID: PMC9074276 PMID: 35524299 [Indexed for MEDLINE]

### **GA/Sedation/Airway Management**

- 278. Complications After Dental Sedation: A Myotonic Mystery Case Report.** *Anesth Prog.* 2022 Dec 1;69(4):26-31. doi: 10.2344/anpr-69-02-09. Karamlou M(1), Asaria I(2), Barron J(2), Boutros P(2), Fisher V(2), Grandinetti R(2), Johnson J(2), Richard E(2), Susko D(2), Urrutia C(2), Woolsey B(3), Baumann R(4), Cottle J(5), Sweaney R(5), Wenzel M(6), Nusstein J(7), Hall D(8). Myotonic dystrophy (dystrophia myotonica; DM) is an uncommon progressive hereditary muscle disorder that can present with variable severity at birth, in early childhood, or most commonly as an adult. Patients with DM, especially type 1 (DM1), are extremely sensitive to the respiratory depressant effects of sedative-hypnotics, anxiolytics, and opioid agonists. This case report describes a 37-year-old male patient with previously undiagnosed DM1 who received dental care under minimal sedation using intravenous midazolam. During the case, the patient experienced 2 brief episodes of hypoxemia, the second of which required emergency intubation after propofol and succinylcholine and resulted in extended hospital admission. A lipid emulsion (Liposyn II 20%) infusion was given approximately 2 hours after the last local anesthetic injection due to slight ST elevation and suspicion of local anesthetic toxicity (LAST). Months after treatment, the patient suffered a fall resulting in a fatal traumatic brain injury. Complications noted in this case report were primarily attributed to the unknown diagnosis of DM1, although additional precipitating factors were likely present. This report also provides a basic review of the literature and clinical guidelines for managing myotonic dystrophy patients for dental care with local anesthesia, sedation, or general anesthesia. DOI: 10.2344/anpr-69-02-09 PMID: PMC9773408 PMID: 36534775 [Indexed for MEDLINE]
- 279. Pediatric morbidity after oral surgery procedures under general anaesthesia: A systematic review.** *J Stomatol Oral Maxillofac Surg.* 2023 Feb;124(1):101262. doi: 10.1016/j.jormas.2022.08.005. Epub 2022 Aug 9. Velasco AL(1), Hueso FJC(2), Silvestre FJ(3), Torres MP(4), Vázquez-Ferreiro P(5). The aim of this study is to carry out a systematic review of the existing literature on postoperative morbidity after general anaesthesia (GA) in the dental care of paediatric patients, its frequency, characteristics and association with the intervention performed. MATERIAL AND METHODS: An exhaustive search of the literature published up to 23 February 2022 was carried out in PubMed, Web of Science, Cochrane and EBSCO, with the following strategy: (infant OR child OR adolescent) AND (Oral Surgical Procedures OR Dentistry, Operative) AND Anesthesia, General AND Postoperative Complications. RESULTS: The most frequent reason for the indication of general anaesthesia was dental caries and its complications (up to 91.0% of patients), followed by lack of cooperation/anxiety and/or fear for dental procedures in the office (between 39.8 and 47.9%). There is a higher prevalence for treatments in the special patient group reaching 87.7% compared to 63.3% in healthy patients. The main comorbidities recorded were: physical or mental disability, neurological, haematological, cardiac disorders, asthma, Down's syndrome; it was not possible to establish their association with the intervention performed. Regarding complications, complaints occurred between 43.0 and 98.9% of cases within the first 24 hours, the main reason being pain (between 14.0% and 95.0%). CONCLUSIONS: Pediatric dental procedures under GA carry a very low risk of major complications, but have a virtually universal incidence of minor complications. DOI: 10.1016/j.jormas.2022.08.005 PMID: 35961509 [Indexed for MEDLINE]
- 280. Dental decision-making under general anesthesia for patients with disabilities: A qualitative study.** *Spec Care Dentist.* 2022 Jan;42(1):20-27. doi: 10.1111/scd.12631. Epub 2021 Jul 13. McGeown D(1), Mac Giolla Phadraig C(1), Whelehan D(2), Nunn

JH(1). 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. DOI: 10.1111/scd.12631 PMID: 34255384 [Indexed for MEDLINE]

**281. Comorbidities in Children with Autism Spectrum Disorder Undergoing Oral Rehabilitation Under General Anesthesia.** J Dent Child (Chic). 2022 May 15;89(2):88-94. Blair N(1), Feingold J(2), Qian F(3), Weber-Gasparoni K(4). Purpose: To investigate the oral health needs and comorbidities among patients with autism spectrum disorder (ASD) undergoing oral rehabilitation under general anesthesia (GA) at a university hospital. Methods: Records of patients with ASD who underwent oral rehabilitation under GA between January 2016 and May 2019 were reviewed to identify comorbid conditions and oral health needs. Statistical analysis consisted of descriptive and bivariate analyses ( $\alpha = 0.05$ ). Results: A total of 160 patients from three to 18 years of age fulfilled the inclusion criteria. Seventy-eight percent were male and 69 percent had public insurance. Behavioral issues, such as anxiety, aggression and nonverbal status, were observed more frequently than reported in the ASD literature. Dental caries, poor oral hygiene and gingivitis were the most common dental conditions observed. Radiographs, sealants, stainless steel crowns and extractions were the most common treatments rendered. Bivariate analysis revealed that subjects who had eight to 15 comorbidities were likely to be older. Conclusions: Patients with ASD have many dental needs and may have comorbid medical conditions that directly affect the safe delivery of GA and dental treatments. As patients with ASD age, the number of comorbidities increases. PMID: 35986472 [Indexed for MEDLINE]

**282. Dental treatment under intravenous sedation prolongs longevity of a fixed prosthesis in patients with intellectual disabilities.** Spec Care Dentist. 2022 May;42(3):209-215. doi: 10.1111/scd.12677. Epub 2021 Nov 17. Yamaguchi-Komeyama K(1), Tanoue N(2), Kurata S(1), Ayuse T(1). AIMS: This study aimed to assess the longevity of a fixed prosthesis in patients with intellectual disability (ID) and to investigate the risk factors associated with the failure of a prosthesis due to abutment tooth extraction or prosthesis dislodgement or removal. METHODS: We studied past medical records to evaluate the longevity of 315 prostheses that were luted in 76 patients with ID. We calculated the survival rates and assessed 15 variables potentially associated with prosthetic failure using multivariate Cox regression analyses with shared frailty for patients. RESULTS: Three-quarters of our sample population had severe or profound ID. The maximum observation period was 31.0 years, and the corresponding survival ratio was 32.5%; the survival ratio at 10 years was 59.4%. The use of intravenous sedation significantly influenced the success of the prosthesis, with the hazard ratio (HR) being 0.49 times that of conventional treatment without behavior-altering drug therapy. The most significant risk factor for prosthetic failure was age at placement; the HR for patients aged  $\geq 31$  years was 2.82 times that for patients aged  $\leq 20$  years. CONCLUSIONS: In patients with severe ID, appropriate intravenous sedation was effective in prolonging the longevity of a fixed prosthesis. DOI: 10.1111/scd.12677 PMID: 34791692 [Indexed for MEDLINE]

**283. The use of general anaesthesia in special care dentistry: A clinical guideline from the British Society for Disability and Oral Health.** Spec Care Dentist. 2022 Jan;42(S1):3-32. doi: 10.1111/scd.12652. Geddis-Regan AR(1)(2), Gray D(3), Buckingham S(4)(5), Misra U(6), Boyle C(7); British Society for Disability and Oral Health. BACKGROUND: General anaesthesia (GA) may be required to support the care of those seen in Special Care Dentistry (SCD) services for various reasons, such as enabling extensive dental care for people with severe learning disabilities or severe dental phobia. Guidance is needed for teams delivering SCD using GA due to the potential risks, implications, and costs of using GA to deliver dental care. AIM: To present evidence-based recommendations, where possible, for teams involved in providing GA for dental care for adults within SCD services. METHODS: A multidisciplinary working group, supported by a formal literature search and stakeholder involvement, iteratively produced and refined the recommendations presented. RESULTS: There was little evidence to inform the guidelines. Recommendations are therefore based mainly on the working group's expert consensus opinion. Clinical guidelines are presented as a set of overarching principles followed by six key sections reflecting patients' pathways from referral to dental services through to their care during and after GA. CONCLUSION: Guidelines are presented to support those providing GA to provide SCD. The need for comprehensive and person-centered assessment and planning is emphasized. DOI: 10.1111/scd.12652 PMID: 35061301 [Indexed for MEDLINE]

**284. 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(1), Leha A(2), Hrasky V(1), Wiegand A(3). 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. DOI: 10.1007/s00784-021-04142-w PMID: PMC8816736 PMID: 34432139 [Indexed for MEDLINE]

285. **Effects of antipsychotics on intravenous sedation with midazolam and propofol during dental treatment for patients with intellectual disabilities.** J Intellect Disabil Res. 2022 Apr;66(4):323-331. doi: 10.1111/jir.12913. Epub 2022 Jan 17. Oda Y(1), Yoshida K(2), Kawano R(3), Yoshinaka T(4), Oda A(4), Takahashi T(4), Oue K(4), Mukai A(4), Irifune M(4), Okada Y(1). BACKGROUND: Some patients with intellectual disabilities (ID) are prescribed antipsychotic drugs for symptomatic treatment of behavioural disorders. Nevertheless, it can still prove difficult to perform dental treatments safely for some patients with ID. In such cases, treatment under intravenous sedation (IVS) is one option. Sedative, hypnotic and  $\alpha$ -blocking effects of antipsychotic drugs may cause adverse events, such as severe hypotension, among patients who take antipsychotic drugs regularly. This study aimed to investigate the effects of oral antipsychotic medication on cardiovascular function during IVS. Accordingly, we compared mean blood pressure (MBP) and heart rate (HR) between patients who regularly take antipsychotic drugs and patients who do not. METHODS: Thirty-seven patients with ID were enrolled in this study. All participants were outpatients of Special Care Dentistry of general hospital and received dental treatment under IVS performed with a combination of midazolam and propofol. Eighteen patients regularly took antipsychotics (medication group), and 19 patients were not currently taking antipsychotics (non-medication group). MBP, HR, dose, and effect-site concentration of intravenous sedative medications were measured at three points: 'before IVS', 'at optimal sedation', and 'during dental treatment'. RESULTS: The magnitude of reduction of MBP was significantly smaller in the medication group than in the non-medication group (P < 0.023). However, there were no differences in MBP, HR, dose, and effect-site concentration of midazolam and propofol between groups at any point. CONCLUSION: These results suggest that antipsychotic medication may not have clinically significant adverse effects on cardiovascular fluctuations during dental treatment under IVS for persons with ID. DOI: 10.1111/jir.12913 PMID: 35040230 [Indexed for MEDLINE]
286. **Dental procedures and operating time under day-care general anesthesia among medically compromised and uncooperative pediatric patients.** Quintessence Int. 2022 Apr 5;53(5):424-431. doi: 10.3290/j.qi.b2793165. Ibrahim NA, Azizi NZ, Nor NAM. OBJECTIVE: To analyze dental procedures and operating time provided to medically compromised and uncooperative pediatric patients under general anesthesia (GA). METHOD AND MATERIALS: This cross-sectional retrospective study reviewed hospital records of pediatric patients treated under day-care GA at a Malaysian university hospital between January 2013 and December 2019. Dental procedures were categorized into preventive, restorative, pulp therapy, extraction, and surgical procedures. Age groups were categorized into < 6 years (primary), 6 to 12 years (mixed) and > 12 years old (permanent), to represent different dentitions. The treatment and operating times under GA were compared between age groups, sex, and medical conditions. RESULTS: A total of 595 patients (455 uncooperative healthy and 140 medically compromised) were included in the study. The mean age of the patients was 5.7 years. Male patients (58.3%) outnumbered female patients (41.7%). The most frequently performed procedure was primary tooth extraction. A higher number of surgical procedures were performed on children aged > 12 years compared to younger age groups (P = .001). Children with medical problems had more preventive (mean 3.85 ± 3.65) than restorative treatments (mean 2.66 ± 2.80) and the results were reversed for healthy children. The mean operating time was 64.71 ± 27.89 minutes. Regardless of health status, children > 12 years old had longer operating times, and the mixed dentition group had the shortest treatment durations. CONCLUSIONS: Different types of dental treatment modalities are provided under GA for pediatric patients and operating time was associated with age group. Findings will be useful to improve efficiency of management of pediatric dental cases under day-care GA. DOI: 10.3290/j.qi.b2793165 PMID: 35274509 [Indexed for MEDLINE]

287. **Intranasal Dexmedetomidine in Elderly Patients (Aged > 65 Years) During Maxillofacial Surgery: Sedative Properties and Safety Analysis.** *J Oral Maxillofac Surg.* 2022 Mar;80(3):443-455. doi: 10.1016/j.joms.2021.10.013. Epub 2021 Oct 30. Xu X(1), Cao Y(2), Wu Y(2), Ding M(2). PURPOSE: Light sedation rather than intravenous sedation is preferred when patients have a low heart rate and blood pressure during maxillofacial surgery. Intranasal administration of dexmedetomidine is reported to be efficacious and safe in adults. However, dexmedetomidine could be unsuitable for routine clinical use in elderly patients because many of these patients take  $\beta$ -blockers, which increase the cardiovascular effects of dexmedetomidine. The objectives of the study were to evaluate the sedative properties and safety of intranasal dexmedetomidine, regardless of concurrent  $\beta$ -blocker treatment, in elderly patients who underwent maxillofacial surgery. METHODS: This study was a retrospective analysis of 535 patients aged > 65 years (American Society of Anesthesiologists physical status I or II) who were undergoing maxillofacial surgery. Very anxious patients and those with hypertension received intranasal 1  $\mu$ g/kg dexmedetomidine through an intranasal mucosal atomization device before anesthesia (local ropivacaine). RESULTS: Intranasal administration of dexmedetomidine decreased the requirement for midazolam before surgery (18 of 252 vs 63 of 283,  $P < .0001$ ), but increased the requirement for norepinephrine (102 of 252 vs 8 of 283,  $P < .0001$ ) during or after the surgery. A combination of a  $\beta$ -blocker and intranasal administration of dexmedetomidine reduced the hemodynamic parameters for an extended period. Intranasal administration of dexmedetomidine resulted in bradycardia and hypotension, regardless of concurrent  $\beta$ -blocker treatment. CONCLUSIONS: Intranasal 1  $\mu$ g/kg dexmedetomidine was associated with a high sedation score during the operation, but also with bradycardia and hypotension. DOI: 10.1016/j.joms.2021.10.013 PMID: 34838503 [Indexed for MEDLINE]
288. **Impact of a geriatric assessment and optimisation-based preoperative clinic on the management of older patients receiving dental treatment under general anaesthetic or conscious sedation: A service evaluation.** *Gerodontology.* 2023 Jun;40(2):192-199. doi: 10.1111/ger.12632. Epub 2022 Apr 22. Prasad R(1), Edwards J(1), Newton P(2), Gerbasi Rodrigues T(2), Curl C(1). OBJECTIVES: The main objectives of the study were to review patient characteristics, recommendations made and treatment outcomes of frail/older patients referred to a specialist multidisciplinary geriatric assessment and optimisation-based preoperative clinic (PROKARE), prior to patients receiving dental treatment under general anaesthesia (GA) or conscious sedation (CS). BACKGROUND: Although the use of preoperative comprehensive geriatric assessment to improve pre/peri and postoperative mortality has been reported for many surgical domains, its use prior to dental surgery has not been reported previously. METHODS: The data were collected retrospectively from the dental notes of 52 patients referred from the Special Care Dental (SCD) Department to the PROKARE service for optimisation prior to dental treatment under GA/CS using a case note study approach. The data extracted included patient demographic characteristics, medical history, clinical management and the treatment outcomes for each patient. The data extracted was analysed with descriptive statistics. RESULTS: Key reasons for referral were caries management, retained roots and poor co-operation. Multiple co-morbidities were noted among the patients referred, with 14 (27%) having four or more co-morbidities. The PROKARE assessment identified issues such as treatment could be carried out under CS instead of GA; consent; and the need for medication change and/or further medical investigations. As per recommendations from PROKARE, 39 patients (75%) received dental treatment while five (10%) did not receive treatment, and a further eight (15%) died prior to treatment. CONCLUSION: Geriatric assessment and optimisation-based preoperative clinics in the dental management of frail, elderly patients having treatment under GA or CS techniques is valuable, but further research and assessment of current service provision are needed to increase the evidence base. DOI: 10.1111/ger.12632 PMID: 35460087 [Indexed for MEDLINE]
289. **Total Intravenous Anesthesia Using Remimazolam and Continuous Cardiac Output Monitoring for Dental Anesthesia in a Patient With Takayasu's Arteritis: A Case Report.** *A A Pract.* 2022 Aug 9;16(8):e01599. doi: 10.1213/XAA.0000000000001599. eCollection 2022 Aug 1. Takaishi K(1), Takata M(2), Aoki R(3), Fujiwara SJL(1), Kawahito S(1), Kitahata H(4). Takayasu's arteritis is a persistent chronic progressive inflammation of the large- and medium-caliber arteries. Controlling cardiovascular variability during anesthesia and overcoming difficulties of cardiovascular monitoring due to the impaired vessels are important in patients with Takayasu's arteritis. Remimazolam is a novel short-acting benzodiazepine with mild effects on hemodynamics. We report the case of a patient with Takayasu's arteritis who underwent oral surgery under general anesthesia. This report highlights the use of remimazolam and remifentanyl to reduce hemodynamic perturbations using estimated continuous cardiac output monitoring. DOI: 10.1213/XAA.0000000000001599 PMID: 35952326 [Indexed for MEDLINE]
290. **Comparison between oral midazolam versus oral ketamine plus midazolam as preanesthetic medication in autism spectrum disorder: double-blind randomized clinical trial.** *Braz J Anesthesiol.* 2023 May-Jun;73(3):283-290. doi: 10.1016/j.bjane.2022.09.003. Epub 2022 Sep 29. Penna HM(1), Paiva APM(2), Romano AJM(3), Alves RL(4), Nascimento Junior PD(4), M3dolo NSP(4). BACKGROUND: Conventional dental care is often impossible in patients with Autism Spectrum Disorder (ASD). Non-collaborative behaviors, sometimes associated with aggressiveness, are usual justifications for premedication in this population. Thereby, this research focuses on the effects of oral midazolam versus oral ketamine plus midazolam as preanesthetic medication in ASD. METHODS: The sample included 64 persons with ASD, aged 2-59 years, scheduled for dental care under general anesthesia. The primary objective of this study was to compare degrees of sedation between two parallel,

double-blinded, equally proportional groups randomized to receive oral midazolam (0.5 mg.kg<sup>-1</sup>, maximum 15 mg) or oral midazolam (0.5 mg.kg<sup>-1</sup>) associated with oral S(+)-ketamine (3 mg.kg<sup>-1</sup>, maximum 300 mg). The secondary outcomes were the need of physical stabilization to obtain intravenous line, awakening time, and occurrence of adverse events. RESULTS: According to the dichotomous analysis of sedation level (Ramsay score 1 and 2 versus Ramsay  $\geq$  3), oral association of S(+)-ketamine and midazolam improved sedation, with increased probability of Ramsay  $\geq$  3, Relative Risk (RR) = 3.2 (95% Confidence Interval [95% CI] = 1.32 to 7.76) compared to midazolam alone. Combined treatment also made it easier to obtain venous access without physical stabilization, RR = 2.05 (95% CI = 1.14 to 3.68). There were no differences between groups regarding awakening time and the occurrence of adverse events. CONCLUSION: The association of oral S(+)-ketamine with midazolam provides better preanesthetic sedation rates than midazolam alone and facilitates intravenous line access in patients with autism. DOI: 10.1016/j.bjane.2022.09.003 PMID: PMC10240218 PMID: 36183860 [Indexed for MEDLINE]

## **Dental Education**

291. **Impact of a geriatric assessment and optimisation-based preoperative clinic on the management of older patients receiving dental treatment under general anaesthetic or conscious sedation: A service evaluation.** Gerodontology. 2023 Jun;40(2):192-199. doi: 10.1111/ger.12632. Epub 2022 Apr 22. Prasad R(1), Edwards J(1), Newton P(2), Gerbasi Rodrigues T(2), Curl C(1). OBJECTIVES: The main objectives of the study were to review patient characteristics, recommendations made and treatment outcomes of frail/older patients referred to a specialist multidisciplinary geriatric assessment and optimisation-based preoperative clinic (PROKARE), prior to patients receiving dental treatment under general anaesthesia (GA) or conscious sedation (CS). BACKGROUND: Although the use of preoperative comprehensive geriatric assessment to improve pre/peri and postoperative mortality has been reported for many surgical domains, its use prior to dental surgery has not been reported previously. METHODS: The data were collected retrospectively from the dental notes of 52 patients referred from the Special Care Dental (SCD) Department to the PROKARE service for optimisation prior to dental treatment under GA/CS using a case note study approach. The data extracted included patient demographic characteristics, medical history, clinical management and the treatment outcomes for each patient. The data extracted was analysed with descriptive statistics. RESULTS: Key reasons for referral were caries management, retained roots and poor co-operation. Multiple co-morbidities were noted among the patients referred, with 14 (27%) having four or more co-morbidities. The PROKARE assessment identified issues such as treatment could be carried out under CS instead of GA; consent; and the need for medication change and/or further medical investigations. As per recommendations from PROKARE, 39 patients (75%) received dental treatment while five (10%) did not receive treatment, and a further eight (15%) died prior to treatment. CONCLUSION: Geriatric assessment and optimisation-based preoperative clinics in the dental management of frail, elderly patients having treatment under GA or CS techniques is valuable, but further research and assessment of current service provision are needed to increase the evidence base. DOI: 10.1111/ger.12632 PMID: 35460087 [Indexed for MEDLINE]
292. **Total Intravenous Anesthesia Using Remimazolam and Continuous Cardiac Output Monitoring for Dental Anesthesia in a Patient With Takayasu's Arteritis: A Case Report.** A A Pract. 2022 Aug 9;16(8):e01599. doi: 10.1213/XAA.0000000000001599. eCollection 2022 Aug 1. Takaishi K(1), Takata M(2), Aoki R(3), Fujiwara SJL(1), Kawahito S(1), Kitahata H(4). Takayasu's arteritis is a persistent chronic progressive inflammation of the large- and medium-caliber arteries. Controlling cardiovascular variability during anesthesia and overcoming difficulties of cardiovascular monitoring due to the impaired vessels are important in patients with Takayasu's arteritis. Remimazolam is a novel short-acting benzodiazepine with mild effects on hemodynamics. We report the case of a patient with Takayasu's arteritis who underwent oral surgery under general anesthesia. This report highlights the use of remimazolam and remifentanyl to reduce hemodynamic perturbations using estimated continuous cardiac output monitoring. DOI: 10.1213/XAA.0000000000001599 PMID: 35952326 [Indexed for MEDLINE]
293. **Comparison between oral midazolam versus oral ketamine plus midazolam as preanesthetic medication in autism spectrum disorder: double-blind randomized clinical trial.** Braz J Anesthesiol. 2023 May-Jun;73(3):283-290. doi: 10.1016/j.bjane.2022.09.003. Epub 2022 Sep 29. Penna HM(1), Paiva APM(2), Romano AJM(3), Alves RL(4), Nascimento Junior PD(4), M3dolo NSP(4). BACKGROUND: Conventional dental care is often impossible in patients with Autism Spectrum Disorder (ASD). Non-collaborative behaviors, sometimes associated with aggressiveness, are usual justifications for premedication in this population. Thereby, this research focuses on the effects of oral midazolam versus oral ketamine plus midazolam as preanesthetic medication in ASD. METHODS: The sample included 64 persons with ASD, aged 2-59 years, scheduled for dental care under general anesthesia. The primary objective of this study was to compare degrees of sedation between two parallel, double-blinded, equally proportional groups randomized to receive oral midazolam (0.5 mg.kg<sup>-1</sup>, maximum 15 mg) or oral midazolam (0.5 mg.kg<sup>-1</sup>) associated with oral S(+)-ketamine (3 mg.kg<sup>-1</sup>, maximum 300 mg). The secondary outcomes were the need of physical stabilization to obtain intravenous line, awakening time, and occurrence of adverse events. RESULTS: According to the dichotomous analysis of sedation level (Ramsay score 1 and 2 versus Ramsay  $\geq$  3), oral association of S(+)-ketamine and midazolam improved sedation, with increased probability of Ramsay  $\geq$  3, Relative Risk (RR) = 3.2 (95% Confidence Interval [95%

CI] = 1.32 to 7.76) compared to midazolam alone. Combined treatment also made it easier to obtain venous access without physical stabilization, RR = 2.05 (95% CI = 1.14 to 3.68). There were no differences between groups regarding awakening time and the occurrence of adverse events. CONCLUSION: The association of oral S(+)-ketamine with midazolam provides better preanesthetic sedation rates than midazolam alone and facilitates intravenous line access in patients with autism. DOI: 10.1016/j.bjane.2022.09.003 PMID: PMC10240218 PMID: 36183860 [Indexed for MEDLINE]

294. **Data set and methodology involving pedagogical approaches to teach mental health and substance use in dental education.** BMC Res Notes. 2022 Feb 19;15(1):70. doi: 10.1186/s13104-022-05960-1. Brondani M(1), Alan R(2), Donnelly L(3). OBJECTIVE: In this Data note, we provide a raw data set in the form of brief self-guided reflections. We also present the methodological approach to generate these reflections including an educational vignette so that other dental schools can plan for their teaching activities involving mental health and substance use topics. DATA DESCRIPTION: Between 2015/16 and 2018/19, the University of British Columbia's (UBC) undergraduate dental and dental hygiene students submitted optional written guided reflections to address 'how can an educational vignette, depicting a patient with a history of substance use and mental health disorders accessing dental care, promote an open dialogue about stigma?' From a total of 323 undergraduate students, 148 anonymous reflections between 200 and 400 characters each were received. The main ideas that may emerge from the reflections include 'exploring power relations' and 'patient-centered care approach to counteract stigma'. DOI: 10.1186/s13104-022-05960-1 PMID: PMC8857912 PMID: 35183240 [Indexed for MEDLINE]
295. **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. doi: 10.1111/eje.12668. Epub 2021 Mar 23. Stuck AK(1), Schimmel M(2). 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. DOI: 10.1111/eje.12668 PMID: PMC9290808 PMID: 33512016 [Indexed for MEDLINE]
296. **Mentoring of oral health professionals is crucial to improving access to care for people with special needs.** PLoS One. 2022 Apr 25;17(4):e0266879. doi: 10.1371/journal.pone.0266879. eCollection 2022. Lim MAWT(1)(2)(3), Liberali SAC(4)(5), Calache H(1)(6), Parashos P(1), Borromeo GL(1). INTRODUCTION: Individuals with special health care needs continue to experience difficulties with accessing regular dental care. This has largely been due to clinicians feeling they lack the training and experience to manage their needs. The aim of this study was to determine whether working closely with specialists in special need dentistry influenced the willingness of clinicians to treat patients with special needs. MATERIALS AND METHODS: Semi-structured interviews were conducted with specialists and clinicians involved in these mentoring initiatives. Qualitative thematic analysis was used to determine perspectives towards how this additional support influenced their willingness to treat individuals with special needs. RESULTS: The views of all participants towards these supports were positive with clinicians feeling it not only offered them opportunities to learn from the specialists, but also increased their willingness to treat individuals with special needs and the timeliness and quality of care they were able to provide. Likewise, despite some concerns about the inappropriate use of specialist support, the specialists felt these mentoring relationships offered many benefits including improving timely access to care and ensuring individuals were able to receive appropriate care. CONCLUSIONS: Mentoring provided by specialists in special needs dentistry improved the willingness of clinicians to provide care for individuals with special health care needs. Supports such as these are likely to be crucial to overcoming concerns of clinicians about their ability to manage the needs of these individuals and begin to address a significant barrier to access of care for individuals with special health care needs. DOI: 10.1371/journal.pone.0266879 PMID: PMC9037927 PMID: 35468149 [Indexed for MEDLINE]
297. **Effectiveness of online training of first and second year AEGD residents in identifying, referring, and managing patients at-risk for substance use and opioid disorders.** J Dent Educ. 2022 Mar;86(3):319-327. doi: 10.1002/jdd.12795. Epub 2021 Sep 30.

Evangelidis-Sakellson V(1), Rifkin M(1). **BACKGROUND AND OBJECTIVES:** Dentists have contributed greatly to the opioid epidemic, dispensing roughly 8.6% of opioids totaling over 18 million prescriptions in a 12-month period from July 2016 to June 2017 and report educational gaps regarding screening techniques for substance misuse and an unfamiliarity with available referral resources. The purpose of this study was to determine the knowledge and comfort level of residents in identifying, referring, and managing patients who are at risk for opioid use or substance use disorder in the dental setting before and after an online case-based training course. **METHODS:** Thirty-five first year (PGY1) and 11 second year (PGY2) advanced education in general dentistry (AEGD) residents participated in an online training course that aimed to assess knowledge in the domains of identifying, referring, and managing patients at risk for substance abuse disorder and opioid use in an academic setting. There were nine subdomains within the three major domains that further assessed resident comfort and knowledge. Before and after training, data were collected and analyzed. **RESULTS:** Analysis of the results indicated that (1) the training modules increased resident comfort in identifying ( $p = 0.011$ ), referring ( $p = 0.032$ ), and managing ( $p = 0.002$ ) patients at risk for opioid substance use. (2) PGY1 residents benefited more than PGY2 residents in identifying ( $p = 0.034$ ) and the manage domains ( $p < 0.001$ ). (3) Residents viewed the module quality, usefulness, and applicability favorably. Further analysis of the nine subdomains is presented. **CONCLUSION:** Our study suggests that dental curricula would benefit from incorporating training of residents in identifying, referring, and managing patients at risk for substance use disorder and opioid use. DOI: 10.1002/jdd.12795 PMID: 35266153 [Indexed for MEDLINE]

298. **Use of a Simulated-Virtual Training Module to Improve Dental Hygiene Students' Self-Reported Knowledge, Attitudes, and Confidence in Providing Care to Children with Autism Spectrum Disorder: A pilot study.** J Dent Hyg. 2022 Oct;96(5):42-51. Cenyon KF(1), Bruhn AM(2), Claiborne DM(2), Bobzien JL(3). Purpose: Autism spectrum disorder (ASD) is a developmental disorder affecting an individual's ability to communicate, interact, behave, and learn. The purpose of this study was to determine knowledge, attitudes, and confidence of dental hygiene students in providing care to children with ASD as a mechanism for evaluating dental hygiene curricula for patients with special needs. Methods: A simulated-virtual training (SVT) intervention was developed as an interactive approach for educating dental hygiene students on providing care to a child patient with ASD. The SVT intervention consisted of a scenario in which the clinician "interacted" with a child with ASD who was having difficulty in the dental environment. Pre- and post-test surveys measured students' knowledge, attitudes, and perceived confidence related to providing dental hygiene services to children with ASD prior to and following the intervention. The Wilcoxon Signed Rank was used to determine statistical significance at the  $p=0.05$  level. Results: Thirty-three second year dental hygiene students completed the pre- and post-test surveys for a response rate of 97%. Statistically significant differences were observed for self-reported confidence to provide care to patients with ASD upon graduation, assessment of the unique needs of children with ASD, and an understanding of the dental needs for children with ASD ( $p < 0.05$ ). Participants' confidence with performing dental hygiene services on children with ASD greatly increased, with statistically significant difference found for almost all services (i.e., oral exam, oral hygiene instruction, oral photos, radiographs, scaling, fluoride treatment;  $p < 0.05$ ) except selective polishing. Most (90%) agreed that there is a need for additional/elective resources to help increase comfort in providing care to children with ASD. Conclusion: Results indicate the SVT intervention increased students' knowledge, attitudes, self-perceived confidence, and comfort. Dental and dental hygiene curricula could include technologies and intervention methods to advance access to dental care by children with ASD. PMID: 36224087 [Indexed for MEDLINE]

### Macroglossia/Tooth Anomalies

299. **Clinical implications of a diagnosis of taurodontism: A literature review.** Adv Clin Exp Med. 2022 Dec;31(12):1385-1389. doi: 10.17219/acem/152120. Pach J(1), Regulski PA(2), Tomczyk J(3), Struzycka I(1). Taurodontism is a morphological anomaly involving multirrooted teeth that is characterized by a vertical shift of the pulp chamber and shortening of the roots. The literature was analyzed to determine the impact of a diagnosis of taurodontism on dental treatment. A total of 85 full-text publications from the years 2005-2021 were analyzed and 20 publications were included in this research. The endodontic treatment of a taurodont tooth is challenging due to the apical displacement of the pulpal chamber floor and the incorrect configuration of the root canal system, or the presence of additional canals. In terms of prosthetics, the use of taurodont teeth as abutments is not recommended as they lack stability due to shorter roots. The extraction of taurodont teeth can be complicated due to an apical shift of the root furcation. In periodontology, taurodont teeth can have a better prognosis as there is less chance of furcation involvement. From an orthodontic point of view, it is important to note that taurodont teeth are not sufficiently embedded in the alveolus and have a greater tendency for root resorption. With regard to genetic diseases, it has been reported that this anomaly can exist as an isolated feature. However, the majority of authors agree that taurodontism is associated with conditions such as Down syndrome, Klinefelter syndrome, cleft lip and palate, hypodontia, amelogenesis imperfecta, and others. From a clinical standpoint, it is very important to diagnose taurodontism before treatment. A diagnosis of taurodontism can be important in the early diagnosis of malformations that commonly occur with this condition. DOI: 10.17219/acem/152120 PMID: 36000881 [Indexed for MEDLINE]

- 300. Etiological diagnosis of macroglossia: Systematic review and diagnostic algorithm.** *Ann Dermatol Venereol.* 2022 Dec;149(4):228-237. doi: 10.1016/j.annder.2022.03.011. Epub 2022 Oct 11. Dietrich E(1), Grimaux X(2), Martin L(2), Samimi M(3). BACKGROUND: The objective of this literature review was to list the different etiologies of macroglossia reported in the literature, to identify characteristics that might guide diagnosis, and to create a diagnostic algorithm. METHODS: The bibliographic search was carried out between October 2019 and July 2020 in the PubMed research base using the keywords "macroglossia" (MESH) and/or "tongue enlargement". RESULTS: Of the 1711 references identified, 615 articles were excluded, and 1096 abstracts were reviewed. We classified the different etiologies identified according to their mechanism and whether they were congenital or acquired. The etiologies are divided into the following categories: genetic malformation syndromes, non-syndromic congenital malformations, endocrinopathies, neuromuscular diseases, storage disorders, infectious, inflammatory, traumatic, and iatrogenic diseases. CONCLUSION: Based on this review, we propose a diagnostic algorithm for macroglossia according to the characteristics described. The most common diagnoses among acquired causes were amyloidosis (13.7%), endocrinopathies (8.8%), myopathies (4%) and tongue tumors (6.7%). The most common congenital causes were aneuploidy, lymphatic malformations, and Beckwith-Wiedemann syndrome, which is the main cause of congenital macroglossia, even if it appears isolated. DOI: 10.1016/j.annder.2022.03.011 PMID: 36229262 [Indexed for MEDLINE]
- 301. Macroglossia in rapidly progressive inclusion body myositis.** *Neuropathology.* 2023 Jun;43(3):252-256. doi: 10.1111/neup.12879. Epub 2022 Nov 8. Yamasaki Y(1), Mukaino A(2), Yamashita S(1), Takeuchi Y(1), Tawara N(1), Yoshida R(3), Honda Y(4), Yamashita T(1), Kakimoto A(5), Ueyama H(5), Ando Y(1). Inclusion body myositis (IBM) is a refractory muscle disease characterized by inflammatory and degenerative features in myofibers. Macroglossia is common in systemic amyloid light chain amyloidosis; however, no reports have been published on patients with IBM. We encountered a female patient with clinicopathologically defined IBM who exhibited relatively rapid progression of dysphagia, gait disturbance, and macroglossia. Muscle biopsy demonstrated endomysial mononuclear inflammatory infiltrates, fiber necrosis and regeneration with rimmed vacuoles, and sarcoplasmic inclusions of p62. Tongue biopsy demonstrated fiber degeneration with fatty replacement and fibrosis, nonnecrotic fibers surrounded and invaded by mononuclear cells, and sarcoplasmic dotlike inclusions of p62. Based on the parotid gland, lip, and muscle biopsy, she was diagnosed as having IBM with Sjögren's syndrome. She was treated with steroid pulse and intravenous immunoglobulin therapy followed by oral administration of prednisolone, which resulted in temporary clinical improvement. Macroglossia might be an indicator of immunotherapy effectiveness. DOI: 10.1111/neup.12879 PMID: 36349419 [Indexed for MEDLINE]
- 302. Macroglossia as the first oral manifestation of dialysis-associated systemic amyloidosis.** *Asian J Surg.* 2023 May;46(5):2092-2093. doi: 10.1016/j.asjsur.2022.11.039. Epub 2022 Nov 23. Mohammed HF(1), Abdelmagied M(2), Jaber MA(3), Ingafou MS(2). DOI: 10.1016/j.asjsur.2022.11.039 PMID: 36428140 [Indexed for MEDLINE]
- 303. Macroglossia: A potentially severe complication of late-onset Pompe disease.** *Eur J Neurol.* 2022 Jul;29(7):2121-2128. doi: 10.1111/ene.15330. Epub 2022 Apr 1. Dupé C(1), Lefeuvre C(1)(2), Solé G(3), Behin A(4), Pottier C(5), Duval F(3), Carlier RY(2)(6)(7), Prigent H(2)(7)(8), Lacau St Guily J(9), Arrassi A(5)(6), Taouagh N(4)(7), Hamroun D(10), Nicolas G(1)(2), Laforêt P(1)(2). BACKGROUND: Pompe disease is a rare neuromuscular disorder caused by a deficiency of a lysosomal enzyme, acid  $\alpha$ -glucosidase. Macroglossia is a classic clinical sign of several inherited myopathies and has also been reported to occur progressively in late-onset Pompe disease (LOPD). METHODS: We describe patients with LOPD and macroglossia included in the French national Pompe disease registry. Clinical, functional, and radiological data were collected during periodic follow-up and analyzed retrospectively. These cases were compared with 15 previously reported cases. RESULTS: Five patients, three females and two males, aged 71-88 years, were included in this study. All but one of the patients suffered from symptoms related to macroglossia before the diagnosis of Pompe disease. Three had localized tongue atrophy and one had significant localized tongue hypertrophy which led to glossectomy 10 years before diagnosis. Two patients had severe dysphagia, one of whom underwent gastrostomy for enteral nutritional support. One patient experienced the persistence of numerous sleep apneas despite nocturnal bilevel positive airway pressure (BiPAP) ventilation. All our patients had dysarthria, and two required speech therapy. Four patients had a tongue hypersignal on magnetic resonance imaging (MRI) T1 sequences. CONCLUSIONS: Detection of macroglossia should be part of the clinical diagnosis and follow-up of patients with LOPD, with a careful evaluation of its main consequences. Macroglossia can have severe functional impacts on speech, swallowing, and sleep. Whole-body MRI with facial sections may facilitate the early diagnosis of Pompe disease with the "bright tongue sign". DOI: 10.1111/ene.15330 PMID: 35302691 [Indexed for MEDLINE]
- 304. Macroglossia as the initial presentation of AL amyloidosis: review and updates in treatment.** *BMJ Case Rep.* 2022 Jul 11;15(7):e249737. doi: 10.1136/bcr-2022-249737. Cherico AS(1), Rizvi A(2), Jayakrishnan T(2)(3), Mewawalla P(4). We encountered a man in his 60s presenting with worsening macroglossia. The patient underwent extensive otolaryngology evaluation and was diagnosed with primary (AL) amyloidosis on tongue biopsy with Congo red stain. The patient then underwent a bone marrow biopsy and was also found to have concurrent multiple myeloma. He started induction therapy with daratumumab and CyBorD (cyclophosphamide, bortezomib, dexamethasone). Cardiac MRI revealed extensive cardiac

amyloidosis and the patient was deemed high risk for autologous stem cell transplant (auto-HCT). Unfortunately, the patient underwent hospitalisation for heart failure exacerbation requiring extensive medical management and passed away as a result of this pathology. AL amyloidosis is a rare disease to begin with and macroglossia as the only presenting sign is notable. This case emphasises the importance of considering AL amyloidosis in patients presenting with similar complaints as macroglossia can be attributed to other less serious aetiologies. DOI: 10.1136/bcr-2022-249737 PMID: PMC9274533 PMID: 35817492 [Indexed for MEDLINE]

- 305. Distribution of congenitally missing teeth and treatment options for the lower second premolars in patients referred to special care.** *Acta Odontol Scand.* 2022 Jul;80(5):382-388. doi: 10.1080/00016357.2021.2021282. Epub 2021 Dec 28. Ojala-Alasuutari M(1)(2), Hassan SJ(1), Näpänkangas R(1)(2), Ylikontiola L(1)(2), Lähdesmäki R(1)(2). OBJECTIVE: The aim was to evaluate the distribution of congenitally missing teeth and the treatment provided for congenitally missing lower second premolars in an eleven-year cohort of patients referred to a publicly funded source of specialist care. MATERIAL AND METHODS: This was a retrospective, register-based cohort study. Search for patients referred to a publicly funded source of specialist care based on ICD10 diagnosis code K00.00 (partial anodontia) and treatment codes EBA00, EBA05, EBA10, EBA12, EBB10 and EBB20 during the period 1.1.2009-27.10.2019 yielded 232 patients (151 females, 81 males), of whom 218, born in 1941-2009, were eligible. Data collected from medical files were presented in the form of descriptive statistics and analysed using Fisher's exact test. RESULTS: The 218 subjects possessed 876 congenitally missing teeth (males 307, females 569) (third molars excluded). The most common missing teeth were upper second premolars and lateral incisors, and lower second premolars and central incisors. No difference in laterality was found. Statistically significant associations were found between the choice of treatment and both the patient's age at referral and the patient's year of birth. Most common treatment for adult patients (age 18-56 years) was placement of an implant (67%), while autotransplantation (11%) was the preferred option for children at the mixed dentition stage (age 9-15 years). CONCLUSIONS: The congenitally missing teeth most commonly involved in referrals of patients to publicly funded specialist care were lower second premolars. The most frequent treatment was insertion of an implant for adults and autotransplantation at the mixed dentition stage. DOI: 10.1080/00016357.2021.2021282 PMID: 34962856 [Indexed for MEDLINE]
- 306. Malocclusion in children with speech sound disorders and motor speech involvement: a cross-sectional clinical study in Swedish children.** *Eur Arch Paediatr Dent.* 2022 Aug;23(4):619-628. doi: 10.1007/s40368-022-00728-4. Epub 2022 Jul 1. Mogren Å(1)(2), Havner C(3)(4), Westerlund A(4), Sjögren L(3), Agholme MB(5), Mcallister A(6)(7). OBJECTIVES: The objectives of this study were to investigate the occurrence, types and severity of malocclusions in children with speech sound disorder (SSD) persisting after 6 years of age, and to compare these findings to a control group of children with typical speech development (TSD). METHODS: In total, 105 children were included: 61 with SSD and motor speech involvement (mean age 8:5 ± 2:8 years; range 6:0-16:7 years, 14 girls and 47 boys) and 44 children with TSD (mean age 8:8 ± 1:6; range 6:0-12:2 years, 19 girls and 25 boys). Extra-oral and intra-oral examinations were performed by an orthodontist. The severity of malocclusion was scored using the IOTN-DHC Index. RESULTS: There were differences between the SSD and TSD groups with regard to the prevalence, type, and severity of malocclusions; 61% of the children in the SSD group had a malocclusion, as compared to 29% in the TSD group. In addition, the malocclusions in the SSD group were rated as more severe. Functional posterior crossbite and habitual lateral and/or anterior shift appeared more frequently in the SSD group. Class III malocclusion, anterior open bite and scissors bite were found only in the SSD group. CONCLUSION: Children with SSD and motor speech involvement are more likely to have a higher prevalence of and more severe malocclusions than children with TSD. DOI: 10.1007/s40368-022-00728-4 PMID: PMC9338153 PMID: 35776286 [Indexed for MEDLINE]

### **Substance Use Disorders**

- 307. Oral health related quality of life and reasons for non-dental attendance among patients with substance use disorders in withdrawal rehabilitation.** *Clin Exp Dent Res.* 2022 Feb;8(1):68-75. doi: 10.1002/cre2.476. Epub 2021 Jul 27. Åstrøm AN(1)(2), Virtanen J(1), Özkaya F(1), Fadnes LT(3)(4). No study has assessed the socio-behavioral distribution of oral health related quality of life (OHRQoL) among patients with substance use disorders receiving medically assisted rehabilitation therapy (MAR) in Norway. OBJECTIVES: To examine the prevalence of oral impacts on daily performances (OIDP) and its distribution among MAR patients in western Norway. We also examined whether oral impacts discriminate with different reasons for non-dental attendance. MATERIAL AND METHODS: A cross-sectional study focusing OHRQoL was nested to the INTRO-HCV study and implemented in six rehabilitation clinics for people with substance use disorders. A total of 167 MAR patients completed personal interviews and oral clinical examination upon entering the clinic for their MAR medication. RESULTS: The prevalence of oral impacts (OIDP > 0) was 61%. Logistic regression, adjusted for sex and age presented with odds ratios (OR) with 95% confidence intervals (CI) revealed that less than 20 remaining teeth (OR = 5.3 95% CI: 1.6-23.3) and dissatisfaction with dental care (OR = 5.1 95% CI: 1.3-19.0) increased the odds of having OIDP > 0. OIDP > 0 was also associated with insufficient dental follow-up due to dental anxiety and poor experiences with perceived attitudes of dental workers. Means OIDP among people

with negative experiences with attitudes of dental care workers were 3.1 (SD 0.8) compared to 1.4 (SD 0.7) among those without negative experiences, and 2.8 (SD) for those with dental anxiety compared to 1.8 (SD) among those without. CONCLUSION: OHRQoL among MAR patients was generally poor. To reach those with a need for dental care, modification of the existing rehabilitation approach toward closer collaboration between dental health care workers and others in contact with drug users might be necessary. DOI: 10.1002/cre2.476 PMID: 34313028 [Indexed for MEDLINE]

### **Unclassified**

- 308. Oral findings in kidney transplant children and adolescents.** Int J Paediatr Dent. 2022 Nov;32(6):894-902. doi: 10.1111/ipd.12965. Epub 2022 May 4. Tuma M(1), Silva Andrade N(2), Correia Aires R(1), Cristelli MP(3), Medina Pestana JO(3), Gallottini M(4). BACKGROUND: Children and adolescents undergoing kidney transplantation may present oral conditions after the procedure, but a few studies have recently described them. AIM: To describe the oral conditions of post-renal transplant children and adolescents. DESIGN: Two calibrated dentists examined all the participants by assessing caries experience, enamel defects, periodontal condition and soft tissue lesions. RESULTS: A total of 120 participants were included in the study, in which 63 (52.5%) were male and 57 (47.5%) were female, with a mean age of 12.78 ± 3.9 years. Among the participants, 104 (86.7%) showed at least one oral change directly related to kidney disease. The most frequent oral findings were enamel defect (49/120; 40.8%) and drug-induced gingival overgrowth (DIGO) (20/120; 16.7%). Gingival bleeding was observed on probing in 115 (95.8%) participants, whereas 69 (57.5%) presented dental calculus and 51 (42.5%) had caries experience. CONCLUSION: Gingival bleeding, enamel defects and DIGO were the most frequent oral findings in kidney transplant children and adolescents. The use of amlodipine and anticonvulsants was associated with DIGO, and there was a positive correlation between oral ulcers and use of everolimus. DOI: 10.1111/ipd.12965 PMID: 35316550 [Indexed for MEDLINE]
- 309. Unusual oral mucosal ulceration post allogenic hematopoietic stem cell transplantation.** Oral Surg Oral Med Oral Pathol Oral Radiol. 2022 Jun;133(6):618-625. doi: 10.1016/j.oooo.2021.08.005. Epub 2021 Aug 15. Schifter M(1), Kwan J(2), Kang M(3), Kwong K(3), Lee A(4), Sukumar S(5), Lin MW(6). DOI: 10.1016/j.oooo.2021.08.005 PMID: 34764055 [Indexed for MEDLINE]
- 310. Brain abscesses due to odontogenic infection: Case series.** Spec Care Dentist. 2022 Mar;42(2):187-193. doi: 10.1111/scd.12659. Epub 2021 Oct 25. Da Silva ACC(1), Viera PVA(1), Bittencourt AA(1), Cavalcante JV(1), Blanco TM(1), Matias DT(1), Rocha AC(1)(2), De Melo Peres MPS(1), Franco JB(1)(3) Brain abscesses due to odontogenic infection are infrequent, but they deserve attention due to the high incidence of serious complications and the high mortality rate. This article aimed to report five cases of cerebral abscess due to odontogenic infection, of patients attended in the Clinical Hospital of Medical School of the University of São Paulo (HCFMUSP). In all cases, treatment consisted of draining the brain abscess, antibiotic therapy and extraction of all teeth responsible for the infection. Streptococcus spp. was the causative agent of all the cases reported in this article. The purpose of the study was to highlight the importance of the dental approach for the resolution of cases. DOI: 10.1111/scd.12659 PMID: 34697819 [Indexed for MEDLINE]
- 311. Accuracy of parent-reported health history in a dental setting.** J Am Dent Assoc. 2022 Nov;153(11):1053-1059. doi: 10.1016/j.adaj.2022.07.007. Epub 2022 Sep 1. Chiao C, Tuncer AH, Jin M, Shanmugham JR, Discepolo KE. BACKGROUND: Obtaining thorough documentation of a patient's medical history is important for dental care professionals, as oral health is connected intricately to systemic health. The purpose of this study was to assess the accuracy of parent-reported health history for pediatric patients in a dental setting. METHODS: A retrospective chart review was conducted on 863 patients 17 years and younger. Parent-reported health history was compared with subsequent physician-to-dentist consultations. The most common diagnoses were grouped on the basis of International Statistical Classification of Diseases and Related Health Problems, Tenth Revision, categories. RESULTS: The sensitivity of parent report of health conditions was highest for reporting mental and behavioral disorders (75.1%; 95% CI, 69.6% to 80.0%), followed by nervous system diseases (63.0%; 95% CI, 47.5% to 76.8%), respiratory conditions (47.9%; 95% CI, 37.6% to 58.4%), congenital conditions (46.3%; 95% CI, 30.7% to 62.6%), and cardiovascular conditions (25.0%; 95% CI, 11.4% to 43.4%) and was lowest for hematologic conditions (12.2%; 95% CI, 4.1% to 26.2%). Parents of children 6 years and older and those with private insurance had higher sensitivity for reporting mental and behavioral conditions than those with children younger than 6 years or having Medicaid (P < .0001). The specificity of parent-reported health conditions ranged from 96.0% for mental and behavioral disorders to 99.8% for hematologic conditions. CONCLUSIONS: Sensitivity varied widely, showing that parents may be unreliable in their report of children's health histories and that dentists cannot rely solely on parents when obtaining health history. PRACTICAL IMPLICATIONS: In advocating for patient safety, especially for those with special needs and complex medical conditions, this study supports the use of medical evaluation before dental treatment and for the integration of dental and electronic health records. DOI: 10.1016/j.adaj.2022.07.007 PMID: 36058728 [Indexed for MEDLINE]
- 312. The association between sleep disturbances and tooth loss among post-stroke patients.** Arq Neuropsiquiatr. 2022 Feb;80(2):173-179. doi: 10.1590/0004-282X-ANP-2020-0368. Vago EL(1), Frange C(1), DA Paz Oliveira G(1), Juliano ML(1), Machado MA(1), Coelho FMS(1)(2). BACKGROUND: Loss of teeth has been associated with neurological and sleep disorders. It

is considered to be a predictor of stroke and leads to modifications of airway patency and predisposition to obstructive sleep apnea. OBJECTIVE: To investigate sleep quality, risk of obstructive sleep apnea and excessive sleepiness among post-stroke patients with tooth loss attending the Neurovascular Clinic of the Federal University of São Paulo. METHODS: The prevalence rates of different types of stroke were assessed among 130 patients with different degrees of tooth loss, along with the presence of sleep disturbances, risk of obstructive sleep apnea and excessive daytime sleepiness. RESULTS: The prevalence of ischemic stroke was 94.6%, with either no significant disability or slight disability. Our sample had poor sleep quality, and a high risk of obstructive sleep apnea, but without excessive daytime sleepiness. Half of our sample had lost between 9 and 31 teeth, and more than 25% had edentulism. The majority used full removable dental prostheses, and more than half of these individuals slept without removing the prosthesis. CONCLUSIONS: We found high prevalence of poor sleep quality and high risk of obstructive sleep apnea among post-stroke patients with tooth loss. This indicates the need for further studies on treating and preventing sleep disturbances in stroke patients with tooth loss. DOI: 10.1590/0004-282X-ANP-2020-0368 PMID: 35352755 [Indexed for MEDLINE]

**313. White Tongue Because of Uremic Stomatitis as a Sign of Advanced Kidney Disease.** Pediatrics. 2022 Oct 1;150(4):e2021056023. doi: 10.1542/peds.2021-056023. Hasselfeld K, Van Ingen J, Chandler G, Williams L, Osborne C, Blanchette E. We present a case of a previously healthy adolescent male who initially presented to his primary care physician with the chief complaint of a "large and white tongue," who subsequently was diagnosed with end-stage kidney disease (ESKD) and associated uremic stomatitis. This patient required admission to a PICU for acute renal replacement therapy with intermittent hemodialysis, and his hospital course was complicated by generalized tonic-clonic seizures. ESKD is difficult to diagnose in the pediatric population because these patients are often asymptomatic in the early stages given the insidiousness of underlying disorders. Renal disease should be considered in the differential diagnosis of a child with a white tongue not being the result of oral candidiasis. DOI: 10.1542/peds.2021-056023 PMID: 36168856 [Indexed for MEDLINE]

**314. Preventive Dental Care and Oral Health of Children and Adolescents With and Without Heart Conditions - United States, 2016-2019.** MMWR Morb Mortal Wkly Rep. 2022 Feb 11;71(6):189-195. doi: 10.15585/mmwr.mm7106a1. Downing KF, Espinoza L, Oster ME, Farr SL. Approximately 900,000 U.S. children have heart conditions, such as congenital heart disease (1). These children might be at increased risk for life-threatening infective endocarditis from oral bacteria in the bloodstream (2). Therefore, preventive dental care (i.e., check-ups, dental cleaning, radiographs, fluoride treatment, or sealant) to maintain oral health is important. Oral health status and receipt of preventive dental care were compared between children with heart conditions (2,928) and without (116,826) using population-based 2016-2019 National Survey of Children's Health (NSCH) data. Approximately 83% of children with and 80% without heart conditions received preventive dental care in the past year ( $p = 0.06$ ). Children with heart conditions were more likely than were those without to have poor oral health (17.2% versus 13.7%;  $p = 0.02$ ) and teeth in fair or poor condition (9.9% versus 5.3%;  $p < 0.01$ ). Among those with a heart condition, having low household income; an intellectual or developmental disability; and no well-child visit or medical home were associated with poor oral health. Receipt of preventive dental care was higher among children aged  $\geq 6$  years and those with insurance. Public health practitioners and health care providers can implement strategies (e.g., parent and patient education and collaboration between pediatricians, dentists, and cardiologists) to improve oral health and care among children with heart conditions, especially those with fewer resources and intellectual or developmental disabilities. DOI: 10.15585/mmwr.mm7106a1 PMID: 35143467 [Indexed for MEDLINE]

**315. Is self-harm among orthodontic patients related to dislike of dentofacial features and oral health-related quality of life?** Angle Orthod. 2022 Mar 1;92(2):240-246. doi: 10.2319/060421-448.1. Al-Bitar ZB, Hamdan AM, Al-Omari IK, Naini FB, Gill DS, Al-Omiri MK. OBJECTIVES: To investigate the relationship between self-reported self-harm and dislike of dentofacial features and oral health-related quality of life (OHRQoL). MATERIALS AND METHODS: Anonymous, self-reporting questionnaires were completed by 699 school children (aged 13-14 years), representing over 1% of the age group in Amman, Jordan. Participants were invited from 23 randomly selected schools in 10 educational directorates. OHRQoL was assessed using the Child Perception Questionnaire (CPQ 11-14). Self-harm was assessed using a constructed self-reporting questionnaire. The relationship between OHRQoL and self-harm was assessed and significant findings were identified at probability of  $\alpha = 0.05$ . RESULTS: Over one-quarter of schoolchildren (26.9%,  $n = 88$ ) admitted self-harming behavior. Self-harm was reported to be due to dislike of dentofacial appearance among 12.9% of participants ( $n = 90$ ). Higher CPQ 11-14 total scores and individual dimension scores were associated with the presence of self-harm ( $P < .001$ ). High self-harm incidence was reported among participants who had dentofacial features that affected appearance ( $P < .001$ ). Among subjects admitting self-harm, the frequency of self-harming behavior ranged from once to over 10 times per year. CONCLUSIONS: Significant relationships were found between self-harm and dislike of dentofacial features and OHRQoL. DOI: 10.2319/060421-448.1 PMID: 34878532 [Indexed for MEDLINE]

**316. Oral health knowledge, attitudes, and practices and oral health-related quality of life among stroke inpatients: a cross-sectional study.** BMC Oral Health. 2022 Sep 19;22(1):410. doi: 10.1186/s12903-022-02446-1. Huang S(1)(2), Liu Y(3), Li M(3), Liu

Z(4), Zhao F(5), Li J(1)(2), Lu H(1)(2), Zhou H(6)(7). **BACKGROUND:** Stroke patients have poor oral hygiene, experience oral dysfunction due to disease factors, and have impaired oral health-related quality of life (OHRQoL). This study aimed to determine the oral health knowledge, attitudes, and practices of stroke inpatients, assess the OHRQoL of these patients, and identify their correlates. **METHODS:** In this cross-sectional study, 281 stroke inpatients aged between 22 and 88 years ( $57.94 \pm 10.94$ ) were conveniently selected from three hospitals in Guangzhou, China. OHRQoL was measured among these stroke patients using a Chinese version of the Oral Health Impact Profile-14 (OHIP-14). SPSS 26.0 was used for statistical analysis. Mean scores, standard deviations, and frequency distributions were obtained. The Mann-Whitney U test, Kruskal-Wallis H test, Spearman's correlation, and multiple linear regression were used in the analysis. **RESULTS:** The mean score of the patients' OHRQoL was  $8.37 \pm 6.67$ , with the highest score in the pain or discomfort of the mouth dimension ( $3.11 \pm 2.13$ ) and pain being the most common negative effect (13.5%). In multiple linear regression analysis, significant differences were found between patients only in age ( $P = 0.008$ ), toothache ( $P < 0.001$ ), self-rated oral health ( $P < 0.001$ ), time since last dentist visit ( $P = 0.037$ ) and reason for not having visited a dentist in the past year ( $P < 0.001$ ). **CONCLUSION:** The OHRQoL of patients hospitalised with stroke was moderate, and oral conditions still need to be improved. Increasing age, toothache, a longer time since the last dental visit and the reason for not visiting a dentist in the past year had a negative effect on OHRQoL, and better self-rated oral health had a positive effect. Therefore, in clinical work, greater attention should be given to elderly stroke patients, patients with poor oral status and poor oral health behaviours, timely assessment of patients' swallowing function, nutritional function, and self-care ability, and early and targeted oral health interventions and guidance. DOI: 10.1186/s12903-022-02446-1 PMID: 36123656 [Indexed for MEDLINE]

**317. Association between primary headaches and temporomandibular disorders: A systematic review and meta-analysis.** *J Am Dent Assoc.* 2022 Feb;153(2):120-131.e6. doi: 10.1016/j.adaj.2021.07.021. Epub 2021 Oct 12. Réus JC, Polmann H, Souza BDM, Flores-Mir C, Gonçalves DAG, de Queiroz LP, Okeson J, De Luca Canto G. **BACKGROUND:** The primary objective of this systematic review was to answer the following question systematically: Is there any association between primary headaches (PHs) and temporomandibular disorders (TMDs) in adults? **TYPES OF STUDIES REVIEWED:** The protocol was registered with the International Prospective Register of Systematic Reviews. The authors performed the search in 6 main databases and 3 gray literature sources. The included articles had to have adult samples. PHs must have been diagnosed using the International Classification of Headache Disorders, and TMDs must have been diagnosed using Research Diagnostic Criteria for Temporomandibular Disorders, Diagnostic Criteria for Temporomandibular Disorders, or International Classification of Orofacial Pain. Risk of bias was evaluated using the Joanna Briggs Institute Meta-Analysis of Statistics Assessment and Review Instrument tools. The meta-analysis was performed using Review Manager software, Version 5.4. Certainty of evidence was screened according to Grading of Recommendations Assessment, Development and Evaluation. **RESULTS:** Nine of 2,574 articles reviewed met the inclusion criteria for qualitative analysis and, of these, 7 met the inclusion criteria for quantitative analysis. Odds ratios (ORs) for painful TMD and tension-type headache (OR, 1.94 [95% CI, 0.56 to 6.76] to OR, 7.61 [95% CI, 1.84 to 31.48]), migraines (OR, 4.14 [95% CI, 1.38 to 12.43] to OR, 5.44 [95% CI, 3.61 to 8.21]), and chronic headaches (OR, 40.40 [95% CI, 8.67 to 188.15] to OR, 95.93 [95% CI, 12.53 to 734.27]) were calculated. Articular TMDs without pain were evaluated in 2 articles, and both did not show positive association with tension-type headache nor migraine. Three studies were classified as moderate risk of bias and 6 as low risk of bias. The certainty of evidence varied between very low and low. **CONCLUSIONS AND PRACTICAL IMPLICATIONS:** Recognizing the positive association between painful TMD and PHs can help dentists and physicians treat the pain and avoid it, or recommend the patient to a specialist. DOI: 10.1016/j.adaj.2021.07.021 PMID: 34649707 [Indexed for MEDLINE]

**318. Periapical disease in post-stroke patients.** *Am J Dent.* 2022 Aug;35(4):197-199. Rotstein I(1), Katz J(2). **PURPOSE:** To assess the prevalence of acute periapical abscesses (PAs) in patients with history of stroke. **METHODS:** Integrated data of hospital patients was used. Data from the corresponding diagnosis codes for PAs and stroke were retrieved by searching the appropriate query in the database. The odds ratio (OR) of acute PAs and its association with post-stroke conditions was calculated and analyzed statistically. **RESULTS:** The prevalence of acute PAs in patients with stroke history was 1.39% as compared to 0.6% in the general patient population of the hospital. The OR was 2.78 and the difference was statistically significant ( $P < 0.0001$ ). The prevalence of acute PAs in patients with a history of hemorrhagic stroke was 1.19% and the OR was 2.38. The difference was statistically significant ( $P < 0.0001$ ). The prevalence of acute PAs in patients with a history of cerebral infarction was 1.55% and the OR was 3.11. The difference was statistically significant ( $P < 0.0001$ ). The prevalence of acute PAs in patients with a history of cerebral infarction without hypertension was 0.87% and the OR was 1.75. The difference was statistically significant ( $P < 0.0001$ ). **CLINICAL SIGNIFICANCE:** Oral healthcare providers should be aware of the possible higher prevalence of periapical abscesses in post-stroke patients. This can include patients with a history of hemorrhagic stroke or cerebral infarction. PMID: 35986935 [Indexed for MEDLINE]

**319. 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(1), Woolley S(2). 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. DOI: 10.1111/scd.12661 PMID: 34652818 [Indexed for MEDLINE]

**320. Temporomandibular-disorder-related pain as a predictor of severe headaches.** Community Dent Oral Epidemiol. 2022 Jun;50(3):206-215. doi: 10.1111/cdoe.12654. Epub 2021 May 7. Ashraf J(1), Närhi M(1)(2), Suominen AL(1)(3)(4), Zaproudina N(5), Saxlin T(1)(3). OBJECTIVE: The current study aimed to investigate the association of temporomandibular disorders (TMD)-related pain with the presence of migraine or tension-type headaches (TTH) over a follow-up period of 11 years. METHODS: Data sets from Finnish national health surveys, the Health 2000 Survey (baseline), and the Health 2011 Survey (follow-up) were utilized. Study participants are undergoing clinical TMD examination at baseline and answering questions related to the presence of migraine and TTH at follow-up were included in the study (n = 530). For analyses, the study sample was divided into two data sets: One with those excluded suffering from migraine at baseline (Data set I, n = 345), and the other excluding those having TTH at baseline (Data set II, n = 464). RESULTS: Based on logistic regression modelling, no consistent association between TMD-related pain and the presence of migraine was observed, although iTMD associated with elevated estimates for migraine. However, participants with muscle-related TMD pain (mTMD) at baseline had markedly higher odds for having TTH at follow-up than participants without mTMD at baseline (OR 2.1, 95% CI 1.2-3.8). Joint-related TMD pain (jTMD) at baseline was inversely associated with the presence of TTH at follow-up (OR 0.4, 95% CI 0.1-1.3). CONCLUSION: Contrasting patterns of the associations of TMD-related pain with different severe headaches point towards a more thorough and systematic research approach are needed to understand the mechanisms behind these associations. DOI: 10.1111/cdoe.12654 PMID: 33961319 [Indexed for MEDLINE]

**321. Personality traits and anxiety in patients with temporomandibular disorders.** BMC Psychol. 2022 Apr 4;10(1):86. doi: 10.1186/s40359-022-00795-8. Hekmati A(1), Mortazavi N(2)(3), Ozouni-Davaji RB(4), Vakili M(5). BACKGROUND: Temporomandibular disorders (TMD) have long been suggested to result from psychological factors. Recent studies, however, tend to consider TMD a chronic psychosomatic illness. The present study was designed to explore the association between TMD and personality profile. The Minnesota Multiphasic Personality Inventory-2-Reconstructed form (MMPI-2-RF) was used to evaluate the association for the first time. METHODS: A total of 258 subjects participated in this case-control study. TMD cases as detected by the Helkimo index were questioned regarding their personality characteristics and anxiety levels using MMPI-2-RF and Spielberger state and trait anxiety inventory. RESULTS: Patients with TMD scored higher on all personality characteristics except for Aberrant Experiences. The psychological profile of TMD showed no significant difference between theoretical and experimental Ideas of Persecution means. Patients with TMD reported significantly higher mean levels of state and trait anxiety than controls. The most frequently found anxiety levels in TMD cases have been mild state and trait anxiety (77.5% versus 74.4%). CONCLUSION: Personality characteristic scores were considerably higher in TMD patients. TMD cases detected by Helkimo index manifest both trait and state anxiety as common findings. DOI: 10.1186/s40359-022-00795-8 PMID: 35379356 [Indexed for MEDLINE]

**322. Traumatic dental injuries and their sequelae in visually impaired adolescents.** Dent Traumatol. 2022 Aug;38(4):309-313. doi: 10.1111/edt.12748. Epub 2022 Mar 11. Dode CB(1), Cavalcante Y(2), Risso PA(2). BACKGROUND/AIM: Traumatic dental injuries are a public health problem. Visual impairment can be considered a risk factor for traumatic dental injury given the difficulties imposed upon visually impaired patients by limited physical perception. The aim of this study was to evaluate the frequency of traumatic dental injuries and their sequelae in adolescents with visual impairment. MATERIAL AND METHODS: Adolescents (12-18 years) with visual impairment (blind or low vision) and no other special needs were included in the study. Data were collected after a clinical and radiographic examination. Data regarding gender, age, type of visual impairment, site of traumatic dental injury, tooth type, and affected tissues, care, and sequelae were obtained. The data were analyzed descriptively and with the chi-square test ( $p < .05$ ). RESULTS: Among 96 adolescents (65% blind; 55% female), 20.8% (n = 20) reported they had previously experienced a traumatic dental injury of 33 teeth (78.8% maxillary central incisors). Combined injuries (30.3%; n = 10) were the most common traumatic dental injuries, followed by concussion (27.3%, n = 9) and enamel-dentine fractures (21.2%, n = 7). Sequelae were observed in 27.3% (n = 9) of the teeth affected by a traumatic dental injury, and apical periodontitis (77.8%, n = 7) was the most common. CONCLUSION: The frequency of traumatic dental injuries among visually impaired

adolescents can be considered high, and the observed sequelae could have been minimized if adequate clinical and radiographic follow up had been carried out. These results suggest the importance of enhanced educational efforts to reduce traumatic dental injuries. DOI: 10.1111/edt.12748 PMID: 35276023 [Indexed for MEDLINE]

**323. Prevalence and risk factors of oral mucositis in paediatric patients undergoing haematopoietic stem cell transplantation.** Oral Dis. 2022 Apr;28(3):657-669. doi: 10.1111/odi.13777. Epub 2021 Feb 2. Alhussain A(1), Alkhayal Z(2), Ayas M(3), Abed H(4). BACKGROUND: A complete understanding of oral mucositis (OM) is crucial to develop appropriate interventions to aid in the successful overall health outcome of paediatric patients undergoing haematopoietic stem cell transplantation (HSCT). AIMS: This study aimed at determining the prevalence and severity of OM and at identifying the predictive factors that might aggravate OM at one-week, two-week and three-week post-HSCT. METHODS: This retrospective, hospital-based study reviewed the medical records of 170 paediatric patients, summarising the patients' characteristics using descriptive statistics. Binary logistic regression was used to identify factors associated with the development of OM. RESULTS: At one-week post-HSCT, 41% of 140 patients (n = 49) had developed OM, this was reduced at two-week (n = 36, 33%) and three-week (n = 13, 19%) post-HSCT. Univariate logistic regression revealed that patients with cancer (OR = 0.16, 95% CI = 0.05-0.54; p-value = .003) had a significantly lower prevalence of OM. Younger patients with an average age of 7.9 years old (OR = 0.85, 95% CI = 0.75-0.97; p-value = 0.013) and the presence of GvHD (OR = 2.37, 95% CI = 1.03-5.45, p-value = 0.042) were significantly related to a higher prevalence of OM. Multivariable logistic regression confirmed that the risk of OM is lower in patients with cancer compared to those with immunodeficiency syndromes or hereditary blood diseases (OR = 0.18, 95% CI = 0.04-0.77; p-value = .021). CONCLUSIONS: This study identified a significantly lower prevalence of OM in patients with cancer compared to other conditions and that young recipients and those who developed GvHD were more likely to have OM. DOI: 10.1111/odi.13777 PMID: 33453145 [Indexed for MEDLINE]

**324. Factors that influence oral hygiene care with hospitalised stroke patients: a mixed methods study.** Disabil Rehabil. 2022 Dec;44(25):7926-7935. doi: 10.1080/09638288.2021.2003450. Epub 2021 Nov 19. Klaić M(1)(2), Seng E(3), McGrath R(3). PURPOSE: Survivors of stroke experience poor oral health during and following hospitalisation. Health professionals consistently report that oral hygiene is complex. Interventions aiming to improve the delivery of oral hygiene care by health professionals rarely use a theoretically driven approach. This study reports the first phase in an intervention development and uses the action, actor, context, target, time (AACTT) framework and theoretical domains framework (TDF) to understand who needs to do what differently in the delivery of oral hygiene care with hospitalised stroke survivors. METHOD: Mixed methods including analysis of oral health policies and clinical guidelines using the AACTT framework, focus group discussions using the TDF and audit of 60 medical records. RESULTS: Policies and guidelines lack specificity regarding what oral hygiene care is and who should be responsible. Health professionals have low beliefs in their capabilities and experience numerous contextual barriers. More than 40% of patients had no documented evidence of oral hygiene care. CONCLUSION: This study used a theoretically driven approach to identify barriers and enablers to health professional delivery of oral hygiene care with stroke survivors. Interventions aiming to improve clinical practice should target beliefs about capabilities, improved access to resources and detailed oral hygiene clinical guidelines. Implications for rehabilitation Survivors of stroke experience poor oral health which can contribute to further strokes, cardiovascular disease and mortality. Health care professionals report difficulties in delivering oral hygiene care to hospitalised stroke survivors and clinical guidelines lack detail regarding oral health assessments, interventions and training. Interventions aiming to improve the delivery of oral hygiene care should target health professional beliefs about their capabilities using strategies such as behavioural practice. Resources specific to oral hygiene care for more complex patients, including suctioning toothbrushes, should be readily accessible for health professional use. Clinical guidelines and policies on oral hygiene care should include detail about training content, assessments tools and how to adapt information for patients with complex impairments. DOI: 10.1080/09638288.2021.2003450 PMID: 34797190 [Indexed for MEDLINE]