



IADR

International Association
for Dental Research

Irish Division

**IRISH DIVISION OF THE IADR
ANNUAL SCIENTIFIC CONFERENCE
VIRTUAL MEETING
FRIDAY 5TH FEBRUARY 2021**

ABSTRACT BOOK



THE DENTAL
SOLUTIONS
COMPANY™



SPONSORS

IRISH DIVISION UNDERGRADUATE HATTON PRIZE AWARD
(SPONSORED BY THE IRISH DIVISION OF THE IADR): (PAGE 1-3)



AUTHORS: Danish Mahmood*, Michael Cronin, Siobhan Lucey, Eimear Hurley (All UCC)

TITLE: The relationship between oral hygiene practices and caries experience among Irish pre-school children.

KEYWORDS: Water Fluoridation, Oral Hygiene, Pea-sized amount of toothpaste, Rinsing Habits, Dental caries.

ABSTRACT:

Objectives: The main objective of this retrospective study was to investigate the oral hygiene behaviours of Irish preschool children with and without caries. The relationship between water fluoridation status and caries experience, as well as the influence of variables including age of brushing commencement, brushing frequency, toothpaste use and rinsing habits, were investigated.

Methods: A cohort of pre-school children were divided into two groups: 1) caries active (CA) recruited at Cork University Hospital and 2) caries free (CF) recruited at local disadvantaged schools in Cork City. The responses to questionnaires were formatted within Microsoft Office Excel (2007). Contingency tables with Pearson chi-square tests were performed and distribution, central tendency as well as dispersion for the variables were calculated in Statistical Program for Social Sciences (SPSS, Version 26) software by IBM.

Results: The sample (n=117) included 54.3% of children in the CA group and 45.7% in the CF group, with a mean age of 50 months and mean dmft value of 3.6. In this cohort, 102 children were served by fluoridated water and 15 children were served by non-fluoridated water. 93.3% of children from non-fluoridated areas had a CA status, compared to 49% of children living in fluoridated areas ($p=0.001$). 74.4% of children who were using more than a pea-sized amount of toothpaste had a CA status, in contrast to 47.5% of children who were using a pea-sized amount ($p=0.006$). 62.7% of children who rinsed after brushing were in the CA group, compared to 44% of children who rinsed indirectly or didn't rinse ($p=0.045$).

Conclusions: In this cohort of pre-school children living in Ireland, lack of exposure to water fluoridation, incorrect toothpaste usage and inappropriate rinsing habits, were associated with caries in the primary dentition. Further research is required to validate these findings in the wider population.

AUTHORS: Komal Virk*, Brett Duane, Darshini Alexandra Ramasubbu; (All TCD)

TITLE: Infection prevention and control and sustainable dentistry: A comparative life cycle analysis of reusable and single-use dental personal protective clothing; (gowns)

KEYWORDS: Sustainability, Microbiology, Infection Control, Dental Public Health.

ABSTRACT:

Objectives: While disposable gowns are thought to be advantageous from an infection prevention and control perspective, the manufacture, use, disposal and associated transport of disposable gowns have been found to have increased greenhouse gas emissions. Environmental impact should be considered during the procurement process, and life-cycle analysis is the most effective method used to evaluate this. The aim of this study is to use an attributional Life Cycle Assessment tool to compare the environmental burdens of disposable and reusable gowns.

Methods: Open Life Cycle Analysis software was used to conduct a life cycle analysis, including cost analysis on both reusable and disposable gowns. This life cycle analysis compares costs, social indicators, energy consumption, greenhouse gas emissions, water consumption and waste generation of both modalities.

Results: With regards to climate change, the manufacture, use and disposal of a reusable gown released 0.138913 kg CO₂ eq, while the 100 disposable gowns related 0.641447 CO₂ eq – more than four times than reusable gown. The manufacturing process is the highest contributor to climate change for both gowns, 27% for reusable gowns and 87% for disposable gowns. The lifecycle of reusable and disposable gowns also contributes to freshwater ecotoxicity, ionizing radiation, and acidification of both terrestrial and freshwater. Manufacturing was the main contributor to environmental impact in all categories for disposable gowns and eight of the fourteen categories for reusable gowns. The process of incineration as the final disposal method of the gowns increased the disposal effects on climate change for both reusable (58%) and disposable gowns (8%). Electricity use in the manufacturing of disposable gowns released 7708% more CO₂ than reusable gowns.

Conclusions: The LCA showed that reusable gowns are less environmentally harmful than disposable gowns. For both reusable and disposable gowns, the manufacturing process is the most significant contributor in the majority of the impact categories. Finding alternative gown production methods to reduce electricity usage would considerably decrease the impact gowns have on the environment. In the spirit of a circular economy, an “ideal” gown would be made using renewable energy and use older gowns to produce new ones.

AUTHORS: Allister McCord* (QUB), Universiteit Maastricht), Ikhlas El Karim (QUB), Carolien Dekker (Universiteit Maastricht), Jessica Forbes (QUB)

TITLE: Analysis of the absence and presence of chronic orofacial pain in head and neck cancer survivors through screening biological, social and psychological factors; systematic review.

KEYWORDS: Head and Neck, Cancer, Orofacial pain, Chronic, Cancer survivors.

ABSTRACT:

Objectives: The objective of this study is to provide a comprehensible and reproducible systematic review to improve the understand the relationship of biopsychosocial factors and chronic orofacial pain in HNC survivors by looking at cancer survivors who both have and do not COFP.

Methods: The systematic review conducted according to a protocol which was designed prior to the commencing of the review. Four databases (Medline, Embase, PubMed and Web of Science) were searched generating 660 results. Exclusion criteria were designed in the protocol. A full text analysis took place after the screening of titles and abstracts. 8 studies that met the eligibility criteria were identified. This was completed by two authors. The studies were screened for biological, social and psychological factors and data regarding chronic orofacial pain was extracted from the studies. The studies were critically appraised using the Newcastle Ottawa Scale and a modified version of the Risk of Bias in Non Randomised Interventions tool.

Results: Results: 8 studies were selected to be included in the systematic review. Only one study reported psychological and social factors. There were a wide variety of methods and time frames used to assess and diagnose chronic orofacial pain across the studies. The prevalence of chronic orofacial pain calculated varied from 12.2% to 50%.

Conclusions: This study demonstrates that chronic orofacial pain is still a persisting problem that affects head and neck cancer survivors. This study has demonstrated that there is a gap in literature in the considering of social and psychological factors in head and neck cancer survivors studies that assess chronic orofacial pain.

IRISH DIVISION POSTGRADUATE HATTON PRIZE AWARD (SPONSORED BY DENTSPLY SIRONA)**(PAGE 4-12)****AUTHORS:** Ms. Miriam Crowley*, Catherine Gallagher; (All UCC)**TITLE:** Submucosal Dexamethasone for Third Molar Surgery, A Randomized Controlled Trial.**KEYWORDS:** Third Molar, Dexamethasone.**ABSTRACT:**

Objectives: Third molar removal is one of the most common oral surgery procedures performed in Ireland. Pain, swelling and trismus are well documented, undesirable consequences following third molar removal. These sequelae have a negative impact on the patients' quality of life post-operatively. We aim to compare the effect of a submucosal injection of dexamethasone on the post-operative pain experienced by the patient versus a control of standard surgical removal of a mandibular third molar on the contralateral side. We also analysed patient preference of treatment regime.

Methods: A randomized controlled trial was conducted involving patients undergoing surgical removal of bilateral, symmetrically-impacted mandibular third molars under general anaesthetic in Cork University Hospital. Each patient acted as their own control in this split-mouth study, with all treatment carried out at one visit. All subjects received standard local anaesthetic bilaterally in the form of inferior alveolar block and long buccal infiltration with 2% lidocaine with 1:80,000 epinephrine. The site randomized for intervention received a 1ml submucosal injection of 4mg dexamethasone in the buccal vestibule adjacent to the lower third molar following administration of local anaesthetic. Both the patient and investigator were blinded to the intervention site.

Results: A total of seventy patients were recruited. Data was recorded with respect to patient demographics, third molar assessment, duration of surgery, pre- and post-operative pain including a 7-day pain diary. The primary outcome measure was patient-reported pain experienced at the intervention versus the control site.

Conclusions: Pain and inflammation are normal physiological responses to tissue trauma such as surgery. We aim to establish if a surgical protocol involving a 4mg submucosal injection of dexamethasone adjacent to the surgical site reduced post-operative pain experienced by the patient in the week following surgery.

AUTHORS: Emma Kerr (QUB)*, Sinead Watson (QUB), Julie McMullan (QUB) Affiliation, Murali Srinivasan (University of Zurich), Gerry McKenna (QUB)

TITLE: General dentists' attitudes and perceived barriers in providing domiciliary dental care to older adults in long-term care facilities or their homes in Northern Ireland: a descriptive qualitative study

KEYWORDS: domiciliary, dental, elderly, qualitative.

ABSTRACT:

Objectives: Many older patients, housebound or living in long-term care facilities (LTCFs) have limited access to dental care. This descriptive qualitative study aimed to understand general dental practitioners (GDPs) attitudes and perceived barriers to undertaking Domiciliary Dental Care (DDC) for those patients.

Methods: Semi-structured telephone interviews were conducted with a purposive sample of 12 GDPs in Northern Ireland. Interviews were digitally-recorded and transcribed verbatim. An iterative coding process using theme-analytic methods was used.

Results: The data was characterised into four major themes – remuneration for GDPs undertaking DDC, risk of professional litigation, complexity of treatment, and the overall framework of the dental care system in NI. Two minor themes identified were practice culture and reasons for undertaking DDC.

The GDPs in the study identified a number of barriers to undertaking DDC including a legal requirement to transport oxygen, lack of organisation and limited oral hygiene care provision in LTCFs, and confusion around their responsibilities for provision of DDC. Those GDPs who were providing DDC indicated that they did so out of kindness and a sense of loyalty to their long-standing patients.

Conclusions: The GDPs in this study identified a number of significant barriers to provision of DDC including limited remuneration. The GDPs indicated that they required clarification of their responsibilities around DDC with clear guidelines necessary given the increase in demand for this service.

AUTHORS: Jessica Fletcher*, Gary Moran, Derek Sullivan; (All TCD)

TITLE: The TLO gene family influences fitness and virulence of the human fungal pathogen *Candida albicans*

KEYWORDS: *Candida*, Candidiasis, Microbiology, Molecular biology, Molecular genetics.

ABSTRACT:

Objectives: *Candida albicans* is a fungal commensal of the human oral cavity, however, if the immune system is compromised, it can cause oral candidiasis. One major difference between *C. albicans* and other *Candida* spp. is the expansion of the Telomere-associated ORF (TLO) gene family. *C. albicans* strains can have 10-15 different TLO genes, while its closest (and less virulent) relative, *C. dubliniensis*, has only two. We believe that expansion of this gene family allows *C. albicans* to be such a successful opportunistic pathogen.

Methods: CRISPR-Cas9 mutagenesis was used to knock out all 14 TLO genes from *C. albicans* (AHY940). Three representative TLO genes (TLO1, 2 and 11) which had been engineered to be under the control of a low-level or strong promoter were selected for reintroduction to the null background. Phenotypic assays and transcript profiling were performed to compare the fitness of the mutant strains to the WT.

Results: Phenotypic analysis of the TLO null mutant showed that in the absence of TLOs, *C. albicans* is highly defective, with a heavily reduced growth rate in nutrient rich media and a constitutively pseudohyphal morphology. In stress inducing conditions, including oxidative stress and cell wall stress inducing, the null mutant was more sensitive than WT. Reintroduction of specific TLOs to the null background restored many phenotypes to WT level, with some differences in each TLO's effect. The transcript profile of the TLO mutant was significantly different to that of the WT.

Conclusions: The wide range of phenotypes affected by deletion of TLOs indicates the role of these genes in a large number of cellular processes. The ability of singular TLOs to affect many phenotypes, with some clade specificity, suggests that the expansion of the TLO family in *C. albicans* contribute to its relative success as a colonizer and pathogen of humans. Determination of precise roles for each gene may allow their use as targets for the development of novel antifungal treatments.

AUTHORS: Eimear Mooney*, Michael Cronin, Ken O'Halloran, Paul Brady; (All UCC)

TITLE: Incidence of Hypoxaemia With Intravenous Fentanyl and Midazolam Sedation For Oral Surgery Procedures.

KEYWORDS: Hypoxaemia, Fentanyl, Midazolam, Conscious sedation.

ABSTRACT:

Objectives: Respiratory depression and airway compromise may result in serious consequences if untreated during conscious sedation. The primary aim was to investigate the incidence of hypoxaemia ($SpO_2 \leq 94\%$) in ASA I&II patients undergoing intravenous sedation with fentanyl and midazolam. The secondary aims included determination of the onset time of hypoxaemic events and significant risk factors for hypoxaemia.

Methods: This prospective observational study required 92 patients to achieve a power of 80% at the 5% significance level. A total of 96 patients, (57 female, aged 16-65) met the inclusion criteria and consented to participation. The operator/sedationist delivered a standard dose of 50mcg of fentanyl followed by titrated midazolam, at a rate no greater than 1mg/min. Oxygen saturations were monitored via pulse oximetry and supplemental oxygen was not given routinely, unless indicated. Verbal or tactile stimulation was performed to encourage respiratory effort when $SpO_2 \leq 94\%$. Monitoring continued for forty minutes from the time of sedation end point. Data was exported from the 'BeneVision N12 Mindray' monitor to Microsoft Excel. Statistical analyses (logistical regression) were performed in SAS® (Version 9.4).

Results: All participants successfully completed treatment and 94 patients were included in the analysis. 50 (53%) individuals developed hypoxaemia, with 19 (20%) proceeding to severe hypoxaemia ($SpO_2 < 90\%$). Following administration of fentanyl, 90% of hypoxaemic events occurred within 13.6 minutes; the majority (66%) were observed during the pre-operative period. The risk of hypoxaemia increased for each 1% reduction in SpO_2 and 1kPa reduction in $EtCO_2$ from baseline by 190% and 192%, respectively. The risk of moderate and severe hypoxaemia increased by 7% ($p=0.0003$) & 8% ($p = 0.0002$) respectively, for each added year of age.

Conclusions: This study presents information on the incidence of hypoxaemia for multidrug sedation in ASA I&II patients in an outpatient oral surgery department. Whilst the hypoxaemia incidence was found to be 53%, all patients remained responsive to respiratory stimulation, consistent with the definition of conscious sedation. Heightened vigilance for desaturation is required for reductions in SpO_2 and $EtCO_2$ from baseline, 14 minutes following fentanyl administration and with advancing age.

AUTHORS: Hiba Mahdi Hassan Adam*, Mairead Harding, Michael Cronin, Eimear Hurley; (All UCC)

TITLE: Prevalence And Associated Factors Of Early Childhood Caries (ECC) In Children Requiring Dental General Anaesthesia (dGA) And Attending Randomly Selected Crèches In Socially Disadvantaged Areas.

KEYWORDS: ECC, water fluoridation, Pea-sized toothpaste, community dentist, parents' attitude.

ABSTRACT:

: This study aimed to evaluate the prevalence and associated factors of ECC in pre-school children (aged less than 71 months) who presented for dGA and attended randomly selected crèches in areas identified as socially disadvantaged in Cork.

1. Compare caries-active and caries-free children; 2. Compare the sample (males/females, medical card holders/non-medical card holders, age differences, fluoride status, brushing and feeding habits); 3. Describe the questionnaire responses; 4. Provide recommendations to inform practice.

Methods: This research is a secondary data analysis of a cross-sectional study conducted in randomly selected crèches in areas identified as socially disadvantaged and children attending for dGA at the CUH Dental Theatre. Two cohorts of children under the age of 71 months were recruited. Data were collected via a detailed structured parental questionnaire and oral examination for dental caries. IBM (SPSS) Version 26 used for data analysis and both descriptive and inferential statistics were performed. Two logistic regression models explored the association between the presence or absence of dental caries and associated factors. The first model explored the association between the presence or absence of dental caries and all the significant associated factors. The second model considered mainly habits and dental attitudes. Significance level was ($p < 0.05$) for both models.

Results: 1. We found two groups

A. Caries-Active (n=69). B. Caries-Free (n=58). 2. ECC increased significantly with age. 3. Pea-sized amount of toothpaste is caries protective. 4. Encourage tap water consumption. 5. Parents of children with dental caries had a preference for the extraction of painful primary teeth. 6. Presence of ECC associated with:- A. Sleepless nights. B. Early commencement of infant formula (under one month). C. Attending the school dentist (state-funded).

Conclusions: 1. ECC increased significantly with age. 2. Explanatory variables associated with absence of ECC:-

A. Access to community water fluoridation (CWF). B. The use of pea-sized amount of toothpaste.

3. Explanatory variables associated with presence of ECC:- A. The early commencement of infant formula (less than one month). B. Sleepless nights. C. Attending school dentist (State-funded).

D. Parents' preference to extract painful primary teeth.

AUTHORS: Vinay Sharma* (TCD), Michael O'Sullivan (TCD), Oscar Cassetti (TCD), Aifric O'Sullivan (University College Dublin), Michael Crowe (TCD)

TITLE: Challenges and Opportunities for Bayesian Inference on Oral Health data

KEYWORDS: Oral health, Bayesian Factor, Contingency tables.

ABSTRACT:

Objectives: To present the ontological challenges in dealing with longitudinal cohort data. To illustrate the use of Bayesian Factor (BF) for contingency table analysis and Bayesian logistic regression as an alternative to the classical p-value.

Methods: Data derived from three waves of the Growing Up in Ireland survey were merged and exploratory data analysis completed using R (version 4.0.2). A dashboard was created using the Shiny web application framework to provide aggregate summaries of dental and nutrition related variables. Contingency tables were analysed using BayesFactor package (BFCT) to test the association of previous dental problem visits at 3 or 5 years of age with dental fillings at 9 years of age. Both the classical generalised linear model and Bayesian logistic regression models for dental problem visits, based on known risk indicators as independent variables, were also generated. A simple logistic regression model predicting dental fillings based on a crude cariogenic index was estimated.

Results: Descriptive summaries indicated both an increase in dental problem visits (from 5% to 16%) and toothbrushing prevalence twice a day or more (from 52% to 75%) between 3 and 9 years of age. A test of association produced a BF >1,000 indicating extreme evidence for the non-independence of dental problem visits at 5 years of age and the probability of having a dental filling at 9 years of age. Not all socio-demographic and dietary variables could be included in the regression analysis as this would have over-specified the model. A crude cariogenic index allowed simple modelling of dietary factors.

Conclusions: Challenges related to ontology created difficulties for longitudinal analysis of dental health behaviours. Using Bayes factors for inferential statistics provided more meaningful evaluation of evidence for the probability of having negative dental health outcomes given dental problem visits at a younger age.

AUTHORS: Cathal Mac Dhaibheid* (St James's University Hospital), Conor Barry (University College Cork), Katy Tobin (TCD), Leo Stassen (St James's University Hospital), Paul Lennon (St James's Hospital), Mary Toner (St James's Hospital), Esther O'Regan (St James's Hospital), Jonathan R Clark (Royal Prince Alfred Hospital, Australia).

TITLE: “Out of House” virtual surgical planning for mandible reconstruction after cancer resection: is it oncologically safe?

KEYWORDS: Oral Cancer, Maxillofacial, 3-D printing.

ABSTRACT:

Objectives: Virtual surgical planning for mandible reconstruction reduces operative and flap ischaemic times while allowing accurate contouring of the neomandible with precise osteotomies. Without “in-house” planning and printing facilities, there is a turnaround time of up to 3 weeks between the online planning session and taking delivery of the custom cutting guides and fixation implant. In some cases, this may delay surgery and there may be concern about planning cancer resection margins so far in advance of surgery. The purpose of this study was to investigate whether the time delay between “out of house” proprietary virtual surgical planning of the mandibular resection for oral cancer and the day of surgery results in compromised margins and oncological disadvantage for the patient.

Methods: A single-centre, single-operator case control study comparing virtually planned surgery and conventional mandibular reconstruction after cancer resection was performed. Patients undergoing bony reconstruction of their mandible after cancer resection between September 2015 and March 2020 were identified from a prospectively maintained free flap database. Time to surgery, margin status and reconstructive outcomes were compared.

Results: The groups were matched in patient demographics, tumour stage and size, nodal status and reconstruction complexity. 53 patients had osseous free flap reconstruction of their mandible after cancer resection during the study period. There were 25 patients in the VSP group and 28 in the non-VSP group. The median age was 62 (11-84) years and 38 (72%) were male. There were 42 (79%) fibulas and 11 (21%) scapulas. VSP resulted in a significant reduction in operating time ($p<0.01$). VSP did not affect bony ($p=0.49$) or soft tissue ($p=0.22$) margin status.

Conclusions: This study shows that despite the time delay between planning the surgical margins during VSP and performing the tumour resection, there is no increase in positive or close resection margins. The results also confirm that virtual surgical planning reduces operative time for mandibular reconstruction by almost one hour on average.

AUTHORS: Banan AL-Natour* (QUB), Fionnuala T Lundy (QUB), Yvonne Dombrowski (QUB), Imad About (Aix-Marseille Université), Ikhlas El Karim (QUB)

TITLE: DNA released by dying cells induces cGAS-STING mediated pulp inflammation

KEYWORDS: DNA sensors, Acute inflammation

ABSTRACT:

Objectives: DNA released by dying cells is a danger-associated molecular pattern (DAMP) that has been implicated in many inflammatory diseases, but its role in pulp inflammation and the subsequent reparative process is unknown. This study aimed to investigate if dental pulp cells (DPCs) were capable of sensing dsDNA and determine the inflammatory response mounted by DPCs upon exposure to dsDNA and its effect on DPCs proliferation, migration, and differentiation.

Methods: dsDNA [poly(dA:dT)] was transfected into DPCs using Lyovec transfection reagent. Lactate Dehydrogenase (LDH) cytotoxic assay was used to determine the potential cytotoxicity of dsDNA on DPCs. MTT assay was used to determine DPCs proliferation upon exposure to dsDNA. Supernatants were collected from DPCs at 24, 72 hours, or 7 days following transfection, and ELISA was carried out to measure IL-6 and IL-8 levels. RT-qPCR was used to determine the expression of the DNA sensors, AIM2, cGAS, and STING in DPCs and the odontogenic genes DSPP, RUNX2, ALP, COLA1, and SPP-1 following transfection. Wound healing assays were used to assess the migratory properties of the DPCs exposed to dsDNA. The STING inhibitor, H-151, and the cGAS inhibitor, G140, were used to determine the key dsDNA sensor at play.

Results: No cytotoxicity was induced upon transfecting dsDNA into DPCs. dsDNA induced an acute inflammatory response that was diminished at day 7. AIM2 was significantly expressed in DPCs upon exposure to dsDNA. cGAS and STING were expressed significantly although at a lower level. H1-51 STING inhibitor significantly reduced IL-6 and IL-8 levels. DPCs proliferative and migratory abilities were diminished upon exposure to dsDNA, but the expression of odontogenic genes SPP-1 and DSPP were increased.

Conclusions: DPCs express the DNA sensors AIM2, STING, and cGAS which enabled the initiation of acute inflammatory responses via the STING pathway suggesting an important role in pulp inflammation.

AUTHORS: Sinead O'Dwyer*, Richeal Ni Riordain (both UCC)

TITLE: Exploring patients' experience of dental implant surgery with or without intravenous conscious sedation: a qualitative study

KEYWORDS: Dental Implant Surgery, Patients' experience, Qualitative research, Tooth loss.

ABSTRACT:

Objectives: Little qualitative evidence is available regarding the patients' experience of dental implant surgery and the influence of intravenous conscious sedation (IVCS) on the implant experience. The aim of this qualitative study was to explore patients' experience of dental implant surgery with or without IVCS with specific consideration given to understanding the patients' preferences, motivations, needs and values.

Methods: Purposive sampling was used to recruit patients from the Dental Surgery Unit of Cork University Dental School and Hospital. A trained facilitator convened the individual in-depth semi-structured interviews over the telephone 7 days' post-surgery. Interviews were manually transcribed and imported into a qualitative software tool (Nvivo). The data were then analysed using a thematic framework.

Results: Eighteen semi-structured telephone interviews were conducted; 8 patients had dental implants placed under IVCS, while 10 had dental implants placed with local anaesthetic (LA) only. Thematic analysis revealed that emergent themes fitted appropriately with 3 different time points along the dental implant surgical journey (Pre-operative, Intra-operative and Post-operative experiences). Data and analysis were categorized, therefore, to follow the patients experience in chronological order. This facilitated narration of the patients accounts of the experience in an explicit way. Preoperative themes that emerged included the impact of tooth lost, financial influences on motivation and dental anxiety. Intraoperative themes included confidence in the operating surgeon, local anaesthetic injections, the dental implant drill and being sedated. While post-operative themes that emerged were pain, postoperative instructions and follow up.

Conclusions: This research offers clinicians deeper understandings of the patients' experience of dental implant surgery, their preferences, motivations, needs and values, as well as the adjunctive effects of IVCS. Moreover, this research offers ways to improve clinical communications based on the patients' views and suggestions and ultimately enhancing the quality of patient care.

IRISH DIVISION POSTGRADUATE CLINICAL AWARD (SPONSORED BY RCSI): (PAGE 13–20)

AUTHORS: Ciaran Moore *, Neill Markey, Christopher Cardwell, Michael Donnelly, Ciaran O'Neill, Gerald John McKenna; (All QUB)

TITLE: Post-radiotherapy dental caries in head and neck cancer patients – preliminary results of an ongoing prospective cohort study

KEYWORDS: Head and neck cancer, Radiotherapy, Dental caries.

ABSTRACT:

Objectives: This exploratory analysis of preliminary data from an ongoing observational study aimed to assess potential variation in the incidence of dental caries in post-radiotherapy head and neck cancer (HANC) patients.

Methods: A prospective cohort study entitled: “The effect of dental and salivary gland radiation dose on the occurrence of post-radiotherapy dental disease in patients with head and neck cancer” is ongoing. The study commenced in December 2018 and aims to recruit a total of 215 patients over 2.5 years. Eligible patients with a clinical diagnosis of HANC were assessed and rendered dentally fit prior to radiotherapy (baseline assessment), including provision of high fluoride (5,000ppm) toothpaste. Patients were followed up at 6, 12, and 24-months post-radiotherapy. Oral health data was collected via a combination of clinical oral assessments and validated patient-administered questionnaires.

Results: Data from the first 60 patients recruited to the study is presented (n=60). Due to the COVID-19 pandemic and interruption to follow-up appointments, data from 6- and 12-month post-radiotherapy dental assessments were pooled. The mean age of the recruited sample was 60.3 (SD 8.4) years, and 75% (n=45) were male. The most common cancer sites under treatment were the oropharynx (n=17), oral cavity (n=12), and larynx (n=10). Approximately half (46.7%) of HANC patients presented with new carious lesions 6-12 months post-radiotherapy. The mean number of teeth affected by caries was 3.4 (SD 2.6). Patients with: (i) higher mean plaque scores (p=0.001), (ii) more severe xerostomia (p=0.033), and (iii) continual intake of prescribed high-sugar dietary supplements after radiotherapy (p=0.040), were more likely to develop post-radiotherapy dental caries.

Conclusions: Post-radiotherapy HANC patients experience high levels of dental decay. Poor oral hygiene, xerostomia, and the continual intake of prescribed high-sugar dietary supplements after radiotherapy may increase the risk of dental caries in these patients.

AUTHORS: Harriet Byrne* (St. James Hospital), Liam Costello (St. James Hospital), Apryl O Halloran, Prince Charles Hospital, Kumara Ekanayake (St. James Hospital), Gerard Kearns (St. James Hospital), Colm Murphy (St. James Hospital)

TITLE: The effect of the COVID-19 pandemic (first lockdown) on Maxillofacial Trauma at the National Maxillofacial Unit

KEYWORDS: Covid-19, Maxillofacial trauma.

ABSTRACT:

Objectives: The COVID-19 pandemic has resulted in unprecedented effects on health care. This is a retrospective study to assess the effects of the first Covid-19 lockdown (CLD) (March - June 2020) on patients with maxillofacial trauma (MT).

Methods: This retrospective study analysed patients with maxillofacial trauma over two periods: Group A (1st March - 30th June 2019) and Group B(1st March - 30th March 2020). The following information was obtained: patient demographics, referral centre, aetiology, fracture and treatment provided.

Results: Study population N= 531: Group A (N =310) and Group B (N= 221) representing a 29% reduction in patients attending the MT service during the CLD. The months April and May showed a marked reduction in patients with MT, 58% (N=181) in Group A vs 38% (N=85) in group B. The mean age was 43 years (7-89) vs 44 years (6-94) in Group A and B, respectively. The gender balance also remained similar, Group A (males 71%, females 29%), and Group B (males 70%, females 30%). The fracture aetiology was as follows in Group A and B respectively; assault 36% (N=111) vs 38% (N= 80) and road traffic accidents 6% (N=17) vs 4% (N= 9). There was an increase in bicycle accidents from N=10 (3%) in Group A to N=18 (9%) in Group B and mechanical falls from 38% (N=119) in Group A to 43% (N=91) in Group B. There was also an increase in female mechanical fall in Group A vs B, 56% (N=50) vs 71% (N= 47).

Conclusions: The first CLD resulted in a decreased attendance with maxillofacial trauma, likely due to decreased socialising and sporting activities. The reduction in the use of public transport and the use of bicycles likely resulted in an increase in bicycle injuries. The increasing rate of mechanical falls by females in Group B raises concerns around a potential increase in female related domestic violence during the CLD. Females presenting with facial trauma require close collaborative assessment with appropriately trained social workers. This is part of an ongoing Covid-19 related study in maxillofacial trauma.

AUTHORS: Neill Markey*, Ciaran Eoin Moore, Gerry McKenna; (All QUB)

TITLE: Oral health status of head and neck oncology patients undergoing pre-radiotherapy dental assessment: a 12-month retrospective study.

KEYWORDS: Oncology, Radiotherapy, Gerodontology.

ABSTRACT:

Objectives: To determine the oral health status, and urgent treatment needs, of dentate head and neck cancer (HANC) patients undergoing pre-radiotherapy dental assessment in Northern Ireland. This study will also examine and compare the levels of dental disease and treatment needs in those patients under 60 years old and patients 60 years and older.

Methods: Dental records of patients who had previously attended the Centre for Dentistry, Belfast, in 2019, were reviewed. Clinical and radiological data relating to the pre-radiotherapy dental assessment of dentate HANC patients prior to radiation treatment were examined. Analysis was conducted for the entire calendar year of 2019.

Results: 134 dentate HANC patients attended for pre-radiotherapy dental assessment. The average age was 60 years. The age range was 31-81 years. 67.2% of patients were male and 32.8% were female. Of the total patients examined, 70 (52.2%) patients were aged 60 years or older. 68.7% of patients were diagnosed with dental caries. 80.1% of pre-radiotherapy patients had periodontitis. Apical pathology was noted in 51.5% of patients. 55.2% of patients required at least one dental extraction. 26.9% of patients required restorations and 5.2% required root canal treatment. 57.8% of patients in the under 60 years old age group had caries compared to 78.6% of patients in the 60 years or older age group. 43.8% of patients in the under 60 years old age group required at least one pre-radiotherapy extraction compared to 65.7% of patients in the 60 years or older age group. 40.6% of patients in the under 60 age group had at least one tooth with apical pathology compared to 61.4% of patients in the 60 years or older age group.

Conclusions: Dentate HANC patients presented with significant dental disease and treatment needs. Early dental assessment, and intervention, is necessary to improve patient outcomes. The patients in the 60 years or older age group are more likely to have caries, more likely to require extractions, and more likely to have apical pathology compared to those patients in the under 60 years age group.

AUTHORS: Charlotte Mc Carra*, Anne O'Connell, Dr. Rona Leith, Isabel Olegario da Costa; (All TCD)

TITLE: Prevalence of Hypomineralised Second Primary Molars in one Dublin school – preliminary findings of a cross-sectional study.

KEYWORDS: Children, Hypomineralised second primary molars, Enamel hypomineralisation, Prevalence.

ABSTRACT:

Objectives: The study sought to determine the prevalence of hypomineralised second primary molars (HSPM) in 4-to-6-year-old Irish school children.

Methods: Ethical approval and parental/guardian consent were obtained. One primary school participated and 81 boys were examined in the school environment. HSPM were recorded using the MIH/HSPM index developed by Ghanim et al. (2015). Five examiners were calibrated in the diagnosis of enamel defects and dental caries. Inter-examiner and intra-examiner agreement had a kappa score of ≥ 0.70 for both HSPM and caries. Caries was recorded using the modified WHO caries index to the level of visual caries into dentine (dv3mft). The association between dental caries prevalence and HSPM was tested using Chi-square ($\alpha = 5\%$).

Results: The prevalence of HSPM was 38.2%. The mean number of affected teeth per child was 2.16 ± 1.13 . The most common defects were creamy-white demarcated opacities (81.8%) of affected teeth. This was significantly greater than the prevalence of yellow-brown demarcated opacities (7.6%), HSPM associated missing second primary molars (6.1%), atypical caries (3.03%) and post eruptive breakdown (1.5%). The most common form of extension reported was extension of less than one third of tooth surface affected. The prevalence of dental caries was 22.2% (mean dv3mft = 0.44 ± 1.03). No association was found between caries experience and HSPM prevalence ($p=0.25$).

Conclusions: The prevalence of HSPM in this sample was 38.2% which is higher than existing studies in Europe. Demarcated opacities were the most common form of the defect. Caries rate is high (22%) but there was no association with HSPM in this sample. Continued investigation of HSPM prevalence is justified in a broader selection of children to determine HSPM prevalence in the population.

AUTHORS: Liam Costello*, Akinsola Ogunbowale, Deirdre McCormack, Kumara Ekanayake, Gerard Joseph Kearns; (All St. James's Hospital)

TITLE: Maxillofacial Fractures in Females: A five-year retrospective review

KEYWORDS: Facial Trauma, Maxillofacial Surgery, Maxillofacial trauma.

ABSTRACT:

Objectives: This retrospective study reviews the maxillofacial fractures (MF) over a 5-year period at the National Maxillofacial Unit, St James Hospital Dublin, with an emphasis on female patients.

Methods: The trauma database was analysed from January 2015 to December 2019. The following demographic details were recorded: patient age and gender, mechanism of injury and facial fracture sites.

Results: 4761 patients had facial fractures during the study : 1125 (24%) female, 3636, (76%) male. Females had 1190 facial fractures, with two fracture peaks : 20-39 years, and 70-89 years. In males, the majority of fractures occurred between 20 and 39 peaking at 20-29 years and tailed off thereafter. In the females the most common fracture sites were: zygomatic 402 (34%), nasal 311(26%), orbital (22%), mandibular 141(12%). There were also smaller percentages of frontal (0.8%) maxillary (4%) and Le Fort fractures (1%). The most common fracture aetiologies were as follows: assault (males 51%, females 20%) and "falls" (males 26% , females 65%). Two hundred and sixty-two (23%) females were managed surgically and 853 (77%) non-surgically.

Conclusions: This study confirms maxillofacial fractures are less common in females. The female age distribution demonstrates two peaks, one in early adult and a second in old age. This may be explained by females living longer and independently and at risk for falls. The most commonly reported fracture aetiology in females was "falls". This raises concerns as to whether "falls" are used to explain an assault. There is an informal concern amongst maxillofacial surgeons that females presenting with facial trauma may be the victims of domestic violence, which may be denied by the victims.

References:

1. Zeitler D L The abused female Oral and Maxillofacial Surgery Patient Approaches for Identification and Management. Oral Maxillofacial Surgery Clinics North America 2007 19(2) 259-265
2. Arosarena DA et al Maxillofacial Injuries and violence against women .Arch Facial Plast Surg 2009 11(1) 48-52

AUTHORS: Niamh Kelly*, Lewis Winning, Fionnuala Lundy, Chris Irwin, Dermot Linden, Gerard Linden, Ikhlas El Karim; (All QUB)

TITLE: Indicators of oral and dental status and risk of COPD

KEYWORDS: COPD, Dental health, Oral health, Periodontal disease.

ABSTRACT:

Objectives: To investigate associations between measures of oral and dental health and chronic obstructive pulmonary disease (COPD) in men in Northern Ireland enrolled in the Prospective Epidemiological Study of Myocardial Infarction (PRIME) study.

Methods: Men in the PRIME study had a comprehensive periodontal assessment and completed a questionnaire on their dental history and behaviour, medical history, social circumstances, demographic background and tobacco use. Spirometry measurements were undertaken and COPD was equated with a ratio of forced expiratory volume in one second (FEV1) to forced vital capacity (FVC) of <0.7. Logistic regression analysis was used to calculate odds ratios (OR).

Results: In total 1380 men aged on average 64.2 (SD 2.9) years had both a dental examination and valid spirometry data. 248 (18%) of the men examined met the criterion for COPD. Those with COPD had mean % predicted FEV1 of 72.3 (SD 16.4) which was significantly lower ($p < 0.0001$) than the men without COPD (95.5 SD 15.0). Men with COPD had fewer teeth ($p = 0.0042$), higher CAL ($p = 0.012$) and were more likely to report having a denture ($p = 0.004$). The unadjusted OR for men with fewer teeth to be identified with COPD was 1.45 [95% CI 1.09-1.93], $p = 0.011$; with higher CAL OR = 1.43 [CI 1.08-1.88], $p = 0.012$ and having a denture OR = 1.50 [CI 1.14-1.97], $p = 0.0041$. After adjusting for age, smoking, BMI, education status and pattern of dental attendance only having a denture remained significant with OR = 1.51 [1.05-2.16] $p = 0.026$.

Conclusions: In a representative sample of dentate men in Northern Ireland, having a denture was an independent risk indicator of COPD.

AUTHORS: Barry Patton* (UCC), Harriet Byrne (St. James Hospital), Cian Henry (St. James Hospital), Katy Tobin (TCD), Conor Barry (UCC)

TITLE: Donor site local anaesthetic wound infusion as an opioid sparing mechanism in fibula free flap reconstruction of the facial bones and its effect on postoperative delirium.

KEYWORDS: Fibula free flaps, local anaesthetic wound infusion.

ABSTRACT:

Objectives: Enhanced recovery of head and neck cancer patients after major free flap surgery requires adequate analgesia but over reliance on opioids should be avoided to minimise their associated complications. The objectives of this study were to investigate the efficacy of a local anaesthetic (LA) donor site wound infusion as an opioid sparing mechanism and its influence on postoperative delirium, length of Intensive Care Unit (ICU) stay and overall length of hospital stay.

Methods: This was a retrospective case controlled cohort study. All patients who underwent fibula free flap reconstruction of their facial bones by a single maxillofacial surgeon between September 2015 and September 2020 were included. A donor site LA infusion protocol was introduced midway through the study period. Patient data was retrieved from a prospectively maintained free flap database and from electronic patient records. Outcomes for patients treated with the donor site LA protocol were compared with those treated prior to the introduction of the protocol.

Results: There were 62 fibula free flap reconstructions in 61 patients. There were 37 (61%) male and 24 (39%) females. The mean age was 58 years (Range 11-84). 43 patients received the LA wound infusion and there were 19 controls treated by a standard postoperative analgesia regimen without the use of the LA infusion. There were no complications associated with either placement of the catheter or the LA infusion. The LA infusion resulted in a significant reduction in opioid requirements ($p < 0.0001$) and postoperative delirium ($p = 0.003$). There was no difference in ICU stay or overall hospital stay.

Conclusions: We recommend the use of a donor site local anaesthetic wound infusion catheter in fibula free flap reconstruction of the facial bones. The catheter is easy to place and safe. The infusion results in a significant reduction in opioid requirements and post-operative delirium.

AUTHORS: Edward Fahy* (St James Hospital), Victor Le (St James Hospital), Kate Farrell (Children's Health Ireland at Crumlin), Colm Murphy (St James Hospital), Gerry Kearns (St James Hospital)

TITLE: Mandibular Distraction Osteogenesis (MDO): a role in the management of paediatric airway obstruction

KEYWORDS: Oral and Maxillofacial Surgery, Mandibular Distraction Osteogenesis, Orthognathic Surgery, Sleep Apnoea, Paediatric Airway Obstruction.

ABSTRACT:

Objectives: Distraction osteogenesis (DO) a process of gradual bone elongation has recognised indications in facial reconstruction. This report identifies a role for mandibular DO (MDO) in paediatric patients with airway obstruction.

Methods: This retrospective study reports seven paediatric patients undergoing MDO treating airway obstruction. The MDO protocol, degree of mandibular advancement outcomes for airway management and post-operative complications was assessed.

Results: The study population included seven patients (M 6, F 1), with severe mandibular retrognathism (MR) based on clinical and radiographic assessment. The diagnoses were as follows: Treacher Collins Syndrome, Klinefelter Syndrome, Pierre Robin Syndrome, Marden Walker Syndrome, Subglottic Stenosis, Sleep Apnoea (OSA). Four patients were tracheostomy and three CPAP dependant. Mean age at distraction surgery was 72 (36-125) months. All patients underwent MDO under general anaesthesia using internal distractors via a submandibular approach with a bilateral mandibular angle osteotomy, a 5-day latency period, and bilateral MDO at 1 mm per day for 20 days. The activation arms were removed at distraction completion. The distractors were removed under general anaesthesia three months following the completion of distraction. The outcomes were as follows: Tracheostomy removed in 3 patients, OSA improved in 3 patients with CPAP discontinued. One patient with subglottic stenosis and autism failed decannulation, the same patient had a fracture of a mandibular distractor and required an iliac crest bone graft and placement of a bone plate. One patient has transient marginal mandibular branch VII weakness.

Conclusions: Airway obstruction secondary to MR can occur with displacement of the tongue into the pharyngeal airway. If severe, tracheostomy or the use of CPAP is necessary. This may result in delayed social and educational development, increased morbidity and family demands. MDO increases the upper airway volume and has a role in the management of paediatric patients with airway obstruction.

DENTAL HEALTH FOUNDATION AWARD (SPONSORED BY DENTAL HEALTH FOUNDATION IRELAND)

(PAGE 21-27)

AUTHORS: Mary O Regan*, Mairead Harding, Noel Woods, Catherine Gallagher, Richeal Ni Riordain; (All UCC)

TITLE: To Describe and Evaluate the Management of the Emergency Dental Needs of a Population during the COVID-19 Pandemic

KEYWORDS: COVID-19, Telemedicine, emergency dental services.

ABSTRACT:

Objectives: To investigate, describe and evaluate the requirements of a cohort of patients accessing emergency dental services and to understand how these patients were managed and the costing involved in Cork University Dental School and Hospital during the COVID-19 Pandemic.

Methods: A retrospective review of an anonymised data set was assessed including all patients who contacted the CUDSH between 18th March and the 10th July 2020. Demographic and clinical data was collated and analysed using SPSS. Costs were provided by CUDSH and a cost analysis was performed to economically evaluate the emergency dental service during the pandemic. This included the costing differences between providing telemedicine and clinic appointments and to evaluate the costing involved in providing PPE.

Results: Patients seeking emergency dental services were mostly between the age of 31-40 years of age, lived within 36minutes of CUDSH and did not possess a medical card. Most of the patients (68%) had not been a patient of CUDSH prior to the COVID-19 pandemic. Almost a third of patients had contacted the emergency dental service in pain, followed restorative issues or orthodontic issues. Almost 82% of patients were agreeable to a video consultation via a telemedicine platform. Over 45% of patients were appointed to a clinic while the remaining were managed remotely or referred either to HSE services, orthodontic services or to the maxillo-facial surgical team. The full economic costing of running an emergency session increased from €1849.28 pre COVID-19 to over €2446 for providing AGPs during the session based on an average decrease in patient number from 12 pre COVID-19 to just 7 during the COVID-19 pandemic. The economic benefit of using a telemedicine platform was also highlighted as the cost of seeing a patient in the emergency dental clinic for examination, prescription and advise but no treatment would be 340€ per patient while if this was completed via a telemedicine consultation this cost would be significantly lower at €56.

Conclusions: The CUDSH provided an essential service for the surrounding population during the COVID-19 pandemic. With new data emerging daily and lots of uncertainty surrounding the virus, CUDSH provided a safe and efficient dental service for those who had a dental emergency during the government restrictions.

AUTHORS: James O'Connor Moneley* (TCD), Jessica Fletcher (TCD), Josie Parker (Swansea University), Steven Kelly (Swansea University), Gary Moran (TCD), Derek Sullivan (TCD)

TITLE: The *Candida albicans* Telomeric Associated ORF (TLO) gene family plays a role in antifungal drug tolerance.

KEYWORDS: Microbiology, *Candida albicans*, Drug Tolerance, Fungal, Mycology.

ABSTRACT:

Objectives: *Candida albicans* is an opportunistic cause of oral infection. Development of resistance and tolerance to antifungal drugs is a growing concern. This study investigated the role of the TLO gene family in the response to the azole drugs, which inhibit fungal sterol biosynthesis. The TLO family is comprised of 14 genes which encode Med2, a subunit of the multiprotein Mediator complex, which is involved in the global control of transcription by bridging DNA bound transcription factors with RNA Polymerase II. The present study is focused on the effect of Telomeric Associated ORFs (TLOs) on the drug tolerance of the fungal pathogen *Candida albicans*.

Methods: A TLO deficient mutant of *C. albicans* in which all 14 genes were deleted was generated using CRISPR-Cas9 technology. Representative TLO genes were reintroduced to complement the deletions. RNA-Seq analysis was used to compare the strains when grown in YPD at 37°C for 4 hours. Expression of TLO genes was examined by qPCR. As part of a comprehensive comparison of the phenotypes of the WT and mutant strains their fluconazole MICs were investigated using E-tests and microdilution assays, and the membrane sterol content identified using mass spectrometry.

Results: Drug sensitivity assays revealed increased tolerance of the TLO null mutant to fluconazole compared to the parent strain, which was reversed upon reintroduction of representative TLO genes. mRNA transcripts of the TLO genes were reduced in the parent strain upon exposure to fluconazole. RNA sequencing data suggested changes in cell wall organisation and reduction in expression of sterol biosynthesis genes in the TLO null mutant. Mass spectrometry revealed reduced ergosterol content in the TLO mutant cell membrane.

Conclusions: These data confirm the involvement of TLO proteins in the development of *C. albicans* tolerance of azole drugs, highlighting their potential as targets for the development of novel antifungal drugs.

AUTHORS: Mary McClory* (QUB), Fionnuala Lundy (QUB), Lewis Winning (TCD), Gerard Linden (QUB), Ikhlas El Karim (QUB)

TITLE: Apical Periodontitis and All-Cause Mortality Among 60-70 Year-Old Men

KEYWORDS: Apical Periodontitis, All-Cause Mortality.

ABSTRACT:

Objectives: To determine whether apical periodontitis (AP) was predictive of all-cause mortality in a cohort of 60-70 year-old men in Northern Ireland enrolled in the Prospective Epidemiological Study of Myocardial Infarction (PRIME) study.

Methods: The periapical status was assessed from dental orthopantomograms (OPT) using the periapical index (PAI; Ørstavik et al. 1986). A PAI score of 3-5 was equated with AP. Men with AP were divided into a HIGH (> 25% readable teeth with AP) and a LOW (<25% readable teeth with AP) group. Logistic regression was used to calculate odds ratios (OR).

Results: The average age of the 1361 men at the baseline was 64.2 (SD 2.9) years, and 441 (32.4%) died during 15.4 (SD 4.1) years of follow-up. There were 152 men with HIGH AP related to teeth that had not been root filled and they had on average 3.2 (SD 1.6) such teeth with AP. 69 (45.4%) of these men died compared with 372 (30.8%) of 1208 men in the LOW AP group, Chi-square = 13.13, $p=0.0003$. The unadjusted OR for a man in the HIGH AP group to have died compared with the LOW group was 1.87 (95% CI 1.33-2.63). The OR attenuated to 1.61 (95% CI 1.11-2.34), $p=0.012$ after adjustment for age, smoking, body mass index (BMI), Socio-economic status (SES), education status and pattern of dental attendance. The comparable unadjusted OR for root filled teeth was 1.40 (95% CI 0.57-3.46), $p=0.46$.

Conclusions: The men in this prospective study with high levels of apical periodontitis related to teeth that were not root filled were at an increased risk of death.

AUTHORS: Niamh Coffey*, Fiona O Leary, Martina Hayes, Francis Burke, Anthony Roberts, Ciara Howlett; (All UCC)

TITLE: Oral implications of prescribed oral nutritional supplements for disease related malnutrition

KEYWORDS: Gerodontology, Epidemiology, Caries, Special Care Dentistry.

ABSTRACT:

Objectives: The objective of this research is to investigate the sugar content of commonly prescribed oral nutritional supplements (ONS), their potential for oral disease and implications this may have for dental practice.

Methods: The nutritional information of commonly prescribed oral nutritional supplements (HSE's standard ONS products List A and List B, and NHS' first and second line ONS products) was obtained from the BNF and confirmed by the information supplied on manufacturer's website. A comparison was made between the sugar content of these. A systematic review was also carried out in 5 databases (Medline, Embase, Web of Science Core Collection, Google Scholar) using the following search terms: "Dental health" "periodont*" "caries" "dental" "candida" AND "oral nutritional supplements".

Results: The sugar content of ONS can be significant, with some of the more commonly prescribed supplements containing over 20g of sugar per serving. 2 studies were included in the qualitative systematic review. Both of the studies were in vitro studies. One study showed that the ONS drink had higher cariogenic potential than milk (higher acidogenicity). The other study showed that qualitative evaluation of microbial growth in different ONS showed that *E. coli*, *S aureus* and *C. albicans* all grew at room temperature (20° C) in dairy drinks and creams. *C. albicans* also grew in the juice which was milk protein-free and lipid-free. Studies also showed that there may be a lack of communication between a patient's medical and dental team regarding the use of ONS and this may result in conflicting advice to patients

Conclusions: 1. The sugar content of ONS frequently prescribed for treatment of malnutrition can be high.

2. The long term use of ONS may be detrimental to a patient's oral health and may increase their risk of oral/dental disease.

3. Dentists need to be aware if their patients are taking ONS and implement a preventative treatment plan if so.

4. There is a need for increased communication and collaboration between nutritionists or medical professionals involved in the prescription of ONS and dental health professionals.

AUTHORS: Claire Murphy* (Riverside Dental), Grace Murphy (Lloyd's Pharmacy)

TITLE: A Survey on Community Pharmacy Staff and their Experience dealing with Acute Child Dental Issues

KEYWORDS: Pharmacy, Dental, Emergency.

ABSTRACT:

Objectives: Community pharmacies play a key role in the community, providing healthcare and advice to all patients, often at a more accessible time than other healthcare providers. A 2017 research survey conducted by the Irish Pharmacy Union showed that 98% of people trust the advice and care they receive from their pharmacist. This trust and relationship often make the community pharmacy the first port of call for children's dental problems. The aim of this survey was to find out how confident community pharmacy staff are with their knowledge for dealing with acute child dental issues.

Methods: An anonymous survey was emailed to all community staff members within Lloyds Pharmacy Group with questions relating to child dental trauma, child dental pain and mouth ulcers in children. The responses received were collated and analysed to better understand community pharmacy colleague's knowledge and confidence in dealing with paediatric dental issues.

Results: We received responses from a variety wide of roles within the community pharmacy group and spread throughout 4 provinces in Ireland. 45% of respondents reported dealing with a child's dental issue monthly or more regularly. 64.5% of respondents knew where the local HSE dental clinic to their store was, but only 29% of respondents knew what services were provided by the HSE. With regards to the 3 main areas surveyed – dental pain, mouth ulcers and dental trauma – 45% and 35% of respondents were extremely confident with dealing with pain and ulcers respectively, but only 3% of respondents felt extremely confident in dealing with dental trauma. Over 90% of respondents felt additional training in dental issues would be beneficial for their roles. Over 90% of respondents felt some form of flowchart to be kept in the pharmacy would be beneficial for dealing with dental issues, and they would prefer this to be in paper form rather than digital.

Conclusions: Dental issues regularly appear in a pharmacy prior to seeing a dentist and community pharmacy staff are keen to improve their knowledge of dental issues. This key interaction could be improved if further training was provided and a closer relationship was developed between the dental sector and the community pharmacy sector.

AUTHORS: Suzy May Harkness*, Conor McLister, Michael Donnelly, Ciaran O'Neill, Gerry McKenna; (All QUB)

TITLE: Tooth Replacement Strategies in Adults with Missing Teeth: a Modified Delphi Analysis.

KEYWORDS: Delphi Analysis, Missing Teeth, Older Adults, Tooth Replacement, Prosthodontics.

ABSTRACT:

Objectives: The aim of this analysis was to develop consensus from experts in Restorative Dentistry on the most appropriate tooth replacement strategies in adult patients with 10 or less functional mandibular teeth. A secondary objective aimed to determine the effect a patient's age has on the appropriateness of various tooth replacement strategies.

Methods: Replacement strategies were approved via an initial pilot study of 7 Restorative Specialists. Restorative Dentistry experts were recruited from the British Society of Restorative Dentistry. International clinicians with previous research experience on shortened dental arch were also invited to participate. Participants were asked to rank the appropriateness of various tooth replacement strategies on a 1-9 Likert scale for patients with differing patterns of missing teeth in 2 age groups, 18-64 and 65+. This was carried out over two rounds. The results indicate a consensus on various treatment options as 'appropriate' or 'inappropriate' within the individual age groups.

Results: Following round 1, four tooth replacement strategies were considered appropriate with consensus, and nineteen were considered inappropriate with consensus. Following round 2, a further nine tooth replacement strategies were considered appropriate with consensus, and a further five tooth replacement strategies were considered inappropriate with consensus. There was consensus amongst study participants on the appropriateness of 37 tooth replacement strategies (37%) across 10 clinical scenarios. Of these, 13 were considered appropriate (13%) and 24 considered inappropriate (24%).

Conclusions: The results indicate that providing no intervention to those missing all mandibular molars in the 65+ group was deemed appropriate with consensus amongst the experts. Acrylic removable partial dentures were deemed inappropriate with consensus for adult patients with this pattern of tooth loss, regardless of age group. Age was not a determinant for dental implant treatment, which was considered appropriate in patients younger and older than 65 years, depending on the pattern of tooth loss. Whilst this analysis may indicate a credible or reasonable opinion, it is important to note that 'consensus' does not mean that the correct answer, judgement or opinion has been reached.

AUTHORS: Majed Almutairi*, Gerry McKenna, Ciaran O'Neill; (All QUB)

TITLE: Satisfaction with publicly funded primary care services in Britain 1998-2018

KEYWORDS: Satisfaction, primary care services.

ABSTRACT:

Objectives: Patients satisfaction with primary care dental services is a function of quality including access and expense. In the UK publicly, funded dentistry is delivered ostensibly by self-employed general dental practitioners. The supply of effort by such dentists to the publicly funded system will depend on public reimbursement arrangements and administrative costs relative to those that can be achieved from private patients. In this paper we examine changes in client satisfaction over 21 years in Britain and relate this to changes in reimbursement arrangements and the broader economic climate.

Methods: We use data on respondent satisfaction and socio-demographic characteristics taken from successive British Social Attitudes Surveys between 1998 and 2018. We exploit a change in reimbursement arrangements in England and Wales relative to those in Scotland and the economic downturn following the financial crisis in 2008 to create natural experiments. Logistic regression analysis with time trend is used to compare satisfaction between Scotland and the rest of Britain controlling for a range of socio-demographic characteristics.

Results: Just over 35,500 responses with complete data were extracted from the surveys. On average 71% of respondents were satisfied or very satisfied with NHS dental services, the average age of the sample was 48.73 years, 17.89% had a degree or above, 56.16% were married and 32.85% had children living at home. Controlling for other variables, satisfaction in Scotland was higher than that in England/Wales throughout the 20 years. Relative satisfaction diverged between 2005 and 2009 and converged between 2010 and 2018 such that significant differences evident in earlier periods were eradicated by 2012.

Conclusions: Satisfaction with NHS dental services in England/Wales largely tracked that in Scotland diverging slightly in immediate prelude to and aftermath of a change in reimbursement arrangements in England/Wales. Changes in relative satisfaction were though dominated by the financial crisis.

ORAL RESEARCH PRESENTATIONS: (PAGES 27-37)

AUTHORS: Isabel O'Grady*, Jeff O'Sullivan (Both TCD)

TITLE: Ethanol and acetaldehyde modulate dysplastic and cancerous oral cell lines.

KEYWORDS: Oral squamous cell carcinoma, Alcohol, Acetaldehyde, Reactive oxygen species, Alcohol dehydrogenase.

ABSTRACT:

Objectives: Alcohol consumption is a traditional risk factor for oral cancer. It is metabolised to carcinogenic acetaldehyde via alcohol dehydrogenases (ADHs) expressed by oral mucosa and oral microbes. Using two oral cancer cell lines, gingival squamous cell carcinoma Ca9.22 and buccal squamous cell carcinoma TR146, and a dysplastic pre-cancerous cell line DOK, this study will look at the ethanol metabolising ability of the cell lines and compare the effects of ethanol versus acetaldehyde at concentrations found in vivo on cell death and ROS production.

Methods: Ethanol metabolising abilities of the cell lines were assessed using an EtOH assay, ADH activity assay and RT-PCR to determine expression of ADH and aldehyde dehydrogenase isozymes. Cell lines were treated with EtOH (0-5%) or acetaldehyde (50-900 μ M) and cell viability, apoptosis and ROS production were measured using AlamarBlue assay and flow cytometric analysis.

Results: All oral cell lines possess ADH activity, which does not result in significant differences in clearance of ethanol from culture media. This study demonstrated that ethanol and its metabolite acetaldehyde affect oral cell lines in terms of viability and ROS production. Ca9.22 cells show sensitivity to both ethanol/acetaldehyde treatments while TR146 cells show sensitivity to ethanol alone. The DOK cells are relatively resistant to ethanol and acetaldehyde and demonstrate an ability to recover from initial insult.

Conclusions: The discriminate effects of ethanol and acetaldehyde on the cell lines may be partly explained by location within the oral cavity and degree of dysplasia. The resistance of dysplastic DOK cells to ethanol and acetaldehyde suggests a mechanism for promoting malignant transformation; by upregulating cell recovery/repair mechanisms exposure to acetaldehyde is prolonged and may lead to increased DNA mutations and tumour formation. Further research is needed to better understand the underlying cellular mechanisms in response to ethanol and acetaldehyde in these cell lines.

AUTHORS: Mairead Hennigan*, Kaumal Baig Mirza, Francis Burke; (All UCC)

TITLE: Perceived Wellbeing in Undergraduate Dental Students: A Pilot Study

KEYWORDS: Wellbeing, Stress, Dental, Undergraduate, Students.

ABSTRACT:

Objectives: The aim of this pilot study is to measure wellbeing and sources of stress at its current level in dental students in Cork University Dental School and Hospital (CUDH).

Methods: Following ethical approval, an online questionnaire was distributed to undergraduate dental students in CUDH. The Perceived Wellness Survey (PWS) and modified Dental Environment Stress (DES) questionnaires were included, as well as questions on student demographics.

Results: There were 72 respondents, giving a response rate of 27.3% with the age ranging from 18 to 28. 66.2% of the respondents were female. The mean wellness composite score (WCS) for all students was 14.01. There was no significant difference between the WCS of students of different year groups or genders. There were significant differences in the mean wellness subscales scores in all years, with the lowest wellbeing exhibited in the psychological and emotional wellness categories, and highest in the social wellness category. In the DES questionnaire, female students exhibited higher stress scores than their male counterparts in 23 out of 34 questions, three of which were statistically significant. Differences in stress scores between year groups was deemed statistically significant in 15 of 34 questions. The mean stress score generally trends upwards with year of study, with fifth-year students showing the highest mean DES score, followed by third-year dental students. When identifying individual stressors, the academic domain was shown to be most stressful for all years, with examinations and grades featuring as one of the three highest stressors across all of the year groups.

Conclusions: This study establishes a baseline of general wellbeing and highlights key areas of stress for dental students studying at CUDH.

AUTHORS: Isabel Olegário* (TCD), Milou S. Schaverus (ACTA), Isaac Murisi Pedroza (Universidad de Guadalajara), Ana Paola R. González (Universidad de Guadalajara), Clarissa Calil Bonifácio (ACTA), Daniela Hesse (ACTA)

TITLE: Glass-ionomer sealants can prevent dental caries but cannot prevent post-eruptive breakdown on molars affected by Molar Incisor Hypomineralisation (MIH): one-year results of a randomized clinical trial

KEYWORDS: glass ionomer cement, molar-incisor-hypomineralisation, dental caries, post-eruptive breakdown, children.

ABSTRACT:

Objectives: To evaluate the preventive effect of glass ionomer cement (GIC) against dental caries and post-eruptive breakdown (PEB) on molars affected by molar incisor hypomineralisation (MIH).

Methods: In this randomized clinical trial, 77 children aged 5 to 9 years with at least one MIH affected molar and without PEB or dentin caries lesions (n=228) were included and randomly allocated into two groups: 1) MIH affected molars that remained non-sealed; 2) MIH affected molars that received GIC-sealants. Dental caries and PEB were clinically evaluated after 6 and 12 months. Associations between dental caries and PEB with independent variables were evaluated using logistic regression analysis ($\alpha=5\%$).

Results: The MIH affected molars allocated to the GIC-sealant group were less likely to develop dental caries compared to those allocated to the non-sealed group (OR=0.23, 95%CI: 0.06-0.95). Conversely, the application of a GIC-sealant was not associated with the prevention of PEB ($p = 0.313$). Furthermore, MIH affected molars presenting yellow-brown opacities were almost 5-times-more-likely to develop dental caries ($p = 0.013$) and 5 times-more-likely to develop PEB compared to those presenting white-creamy opacities ($p = 0.001$).

Conclusions: GIC-sealants can prevent dental caries on MIH affected molars; however, the same protective effect was not observed for PEB.

AUTHORS: Shane O'Dowling Keane*, Graham Quilligan (Both UCC)

TITLE: The Impact of COVID-19 on Undergraduate Restorative Dentistry Waiting List

KEYWORDS: COVID-19, SARS-CoV-2, Restorative Dentistry.

ABSTRACT:

Objectives: In Cork University Dental School and Hospital (CUDSH), Undergraduate Restorative Dentistry Clinics are carried out on open plan polyclinics. The COVID-19 pandemic has had a dramatic impact on the viability of clinical dental treatment in open plan settings. A review of the patient waiting list for treatment on the Undergraduate Restorative Dentistry Clinic was carried out to assess patient suitability for treatment on a polyclinic.

Methods: Patient charts from the Undergraduate Restorative Dentistry waiting list in CUDSH were reviewed by clinical teaching staff in Restorative Dentistry. The Health Protection Surveillance Centre guidelines for dental treatment were used to triage patients according to risk of developing severe disease from SARS-CoV-2. Risk factors included: age, immune status, underlying cardiovascular disease, diabetes mellitus, chronic lung disease, chronic kidney disease, smoking and excessive BMI.

Results: 299 charts were reviewed. 2 were excluded due to unclear medical history forms. 27.3% (81) of patients were unsuitable for treatment on a polyclinic: 9.1% (27) due to age. 7.4% (22) due to underlying medical conditions. 10.8% (32) due to multiple risk factors.

Conclusions: The pandemic has presented huge challenges for dental students and academic staff. 27.3% of the patients attending the Undergraduate Clinics in CUDSH were unsuitable for treatment during the COVID-19 pandemic. This has substantial impacts on the ability of dental students to develop clinical skills. There is also considerable impact on the dental health of affected patients as their treatment is deferred until it is safe to return. Novel approaches to clinical teaching are required and being developed with greater emphasis on training with phantom heads and online teaching modalities. Future designs of undergraduate clinics may need to consider a mix of open plan and closed surgeries to mitigate the risk of airborne and droplet viral transmission.

AUTHORS: Junaid Nayyar*, David McReynolds; (Both TCD)

TITLE: Atraumatic Dental Extraction – Clinical/Socket Preservation Techniques

KEYWORDS: atraumatic extraction, socket preservation, bone preservation, extraction.

ABSTRACT:

Objectives: 1) To highlight the rationale and benefits of bone preservation when carrying out a dental extraction.

2) To demonstrate two techniques that can be used to extract a tooth or tooth roots atraumatically.

The principles of dental extraction are to either make the socket that contains a tooth larger than the tooth itself, or to make the tooth smaller than the socket that contains the tooth to allow the creation of a path of removal. Atraumatic extraction techniques are based upon preserving the socket size and therefore maintaining the integrity of the surrounding alveolar bone.

Methods: This abstract will present the clinical application of two techniques:

Technique 1: Sectioning a tooth into smaller fragments such that they can be removed sequentially and thus preserving the integrity of the extraction socket as well as possible.

Technique 2: In scenarios where a root fragment fractures deep within a socket, a stainless steel endodontic k-file of sufficient rigidity can be used to engage the root canal dentine of the fragment and permit removal.

Results: Both techniques are presented visually with sequential intra-operative clinical photography.

Technique 1: An unrestorable endodontically treated lone-standing mandibular molar is sectioned along the furcation, separated with a controlled fracture and extracted in two fragments, whilst another molar in similar condition is extracted with a similar technique

Technique 2: A #55 and #90 stainless steel endodontic k-file were used to remove deeply positioned fractured roots without causing further trauma to the surrounding alveolar bone.

Conclusions: These clinical techniques allow the preservation of as much alveolar bone and associated soft tissues as possible. Such techniques greatly improve healing outcomes as there is less physiological trauma for the body to contend with. Preservation of bone and subsequent preservation of gingival contours of adjacent teeth prevents recession and dentine hypersensitivity. Subsequent restorative treatment supported by superior alveolar bone provides better basal foundations for dental implant placement and other prosthodontic solutions.

AUTHORS: Ryan Wortman, Cristiane da Mata*; (Both UCC)

TITLE: The impact of the Covid-19 pandemic on dental students' stress levels

KEYWORDS: Covid-19, dental students, stress levels.

ABSTRACT:

Objectives: To explore dental students' perceptions and concerns regarding the current COVID-19 pandemic, their coping strategies and support resources, and its impact on their perceived stress levels.

Methods: A survey was distributed electronically to BDS3, BDS4 and BDS5 students from the Cork University Dental School and Hospital. The survey consisted of 19 questions, including questions on demographic information, students' perceptions regarding the current COVID-19 situation; their concerns as it relates to the pandemics; and coping strategies. The Perceived Stress Scale (PSS) was also used to help understand how the pandemic affected students' feelings and perceived stress. Linear modeling was used to explore the relationships among demographics, stressors, coping mechanisms, social support, and stress.

Results: Ninety-five BDS3, BDS4 and BDS5 students replied to the survey. Among these, 92 students stated they were concerned about the impact of the pandemic on their dental education, 75 are stressed about graduating on time and 95 find the changes made to their dental education stressful. All students sought support from their family and friends during this time with the majority to a great extent (52.6%). The Perceived stress scale (PSS) showed that the majority of students (53.7%) are moderately stressed with females reporting the higher stress scores (31.7%) compared to males (17.1%). Moreover, final year students presented higher stress values than third- and fourth-year students.

Conclusions: The Covid-19 pandemic has had an impact on dental students. In general, stress levels were moderate among students, and PSS scores were higher among males and final year dental students.

AUTHORS: Eabha Cronin*, Michael O'Sullivan, David McReynolds; (All TCD)

TITLE: Customising the Emergence Profile of Implant Retained Fixed Dental Protheses - a Pressing Matter

KEYWORDS: Emergence profile site development, Custom non-collapsible impression copings, Single tooth implant prosthodontics, Full arch implant prosthodontics.

ABSTRACT:

Objectives: Implant retained fixed dental prostheses (FDPs) can fulfil both the functional and aesthetic requirements of a pleasing dental reconstruction. The aesthetic requirements, however, are often compromised by a lack of attention given to the gingival architecture that will frame the prosthesis. The use of standard implant healing abutments creates a uniformly round, rather flat gingival emergence profile. This forgoes the possibility of generating natural looking pseudo-papillae to mimic the tooth-gingiva appearance as well as risking an uncleanable prosthesis design. Three case reports are presented to outline a process of gingival conditioning (demonstrated with both digital and conventional workflows) using customised healing abutments and simple soft tissue compression techniques.

Methods: Impressions are made and custom healing abutments fabricated, incorporating an ideal emergence profile into these abutments. These healing abutments replace the standard abutments and exert a gentle pressure on the peri-implant tissue to create a smooth, convex and aesthetic emergence profile. Once satisfied with the gingival configuration created, a new impression is made and the definitive implant retained prosthesis is fabricated with a customised emergence profile that enhances both the resultant aesthetics and cleansability.

Results: For single tooth and short-span FDPs, the interproximal gingival downgrowth creates pseudo-papillae to mimic that of the natural tooth-to-gingiva architecture. For full arch implant prostheses, the gingival contouring completed allows the creation of a smooth, convex tissue surface for full arch implant restoration. This can greatly increase the cleansability of such prostheses and thus increase their success.

Conclusions: This clinical technique presentation highlights three cases where optimised restorative outcomes are achieved when applied to single tooth, short-span FDP and full arch implant prosthodontic reconstructions.

AUTHORS: Fiona O’Leary*, Niamh Coffey, Martina Hayes, Francis Burke, Mairead Harding (All UCC)

TITLE: A Systematic Review of The Prevalence of Developmental Defects of Enamel In People With Cystic Fibrosis

KEYWORDS: cystic fibrosis, oral health, developmental defects of enamel, public health.

ABSTRACT:

Objectives: To critically evaluate the literature on the prevalence of developmental defects of enamel in people with cystic fibrosis, in order to establish if this group are at increased risk of developmental defects of enamel.

Methods: Three online databases – Embase, Web of Science Core Collection, and Scopus– were used to identify relevant references and citations using a combination of the following search terms: “cystic fibrosis”, “dental hard tissue”, “enamel defect”, “developmental enamel defect”, “dental hypoplasia”, “dental hyperplasia”, and “oral health”. A systematic review of English language articles from 1960 to 2020, in accordance with the Preferred Reporting Items for Systematic reviews and Meta-Analysis (PRISMA) Statement was conducted. Studies that were of case-control or cohort or cross sectional design were included. Studies were included if they directly examined an association between cystic fibrosis and developmental defects of enamel.

Results: The search resulted in 123 publications from Embase, Scopus and Web of Science Core Collection. Based on information provided in the study title and abstract, 114 publications were excluded. Articles with an irrelevant subject topic, and systematic or literature reviews were excluded. Nine publications met eligibility criteria and were included in this systematic review.

Conclusions: There is a general finding that the prevalence of DDE is higher in people with Cystic Fibrosis. Eight studies reported an increased prevalence of DDE in study groups compared to non-Cystic Fibrosis control groups. Not all differences were statistically significant. One study reported no difference between the study and control group. There is a lack of consensus on the aetiology of DDE in people with Cystic Fibrosis, however, dysfunction of the Cystic Fibrosis Transmembrane Conductance Regulator gene, chronic systemic infection and long-term antibiotic use have been theorised as possible causes. There is a need for future studies to investigate if the disease process of Cystic Fibrosis is a causative factor for DDE.

AUTHORS: Bernadette John*, Christine McCreary, Anita Wilcox, Anthony Roberts; (All UCC)

TITLE: Smartphone clinical communication amongst Irish Dental Professionals

KEYWORDS: Smartphone, Clinical Communication, Irish, Dentist, GDPR.

ABSTRACT:

Objectives: Effective communication between clinicians is essential in health care settings including Dentistry. Smartphone technology is ubiquitous in modern society and clinical practice due to its cost effective and efficient communication functionality. The purpose of this study was to determine the prevalence of smartphone ownership and clinical communication in the Irish Dental Profession, trends in usage and Digital Professionalism.

Methods: A Google form questionnaire was developed and distributed in 2020 to the dental profession via email (196 dental staff & 13 post graduate students at UCC), via letter (500 Irish Dental Council members through a letter with a URL to the still active questionnaire (<https://forms.gle/PvAUpKiScRsictAm9>) and during a webinar given to the Irish Dental Association (more respondents welcome).

Results: A total of 98 responses were received with 96 (98%) of respondents confirming they owned a smartphone (n=64% Apple; n=31% Android; n=3% Other). Respondents reported the use of SMS/iMessage (n=49; 50%) or App based messaging (e.g. WhatsApp n=51; 52%) to communicate patient related clinical information to colleagues. Many respondents (n=49; 50%) perceived inadequate personal skills in 'Digital Professionalism'. Patient-related clinical information was stored on the smartphones of n=50 (51%) respondents with n=30 (31%) having data streaming to another device and n=51 (52%) having data streaming to cloud-based services. A large number of respondents n=92 (94%) perceived the need for support to clean/wipe their smartphone before trading in/up their device.

Conclusions: Smartphone technology is highly prevalent among Irish dentists with many (approx. 50%) using their device to communicate patient related clinical information (including photographs) without appropriate GDPR compliance. The security of the information is concerning, especially as these patient data may (inadvertently) be streamed to other devices or stored insecurely on remote cloud-based servers. Dentists require urgent signposting to secure digital solutions and training on Digital Professionalism.

AUTHORS: Patrice James*, Mairead Harding, Tara Beecher, Denis O'Mullane, Michael Cronin, Helen Whelton; (All UCC)

TITLE: Impact of Water Fluoridation, Socio-demographic and Behavioural Factors on Caries

KEYWORDS: Dental caries, Water Fluoridation, Prevalence.

ABSTRACT:

Objectives: To assess the association between community water fluoridation (CWF) at 0.6 to 0.8 ppm, socio-demographic and behavioural factors and caries prevalence and severity in primary teeth of 8-year-old children in Cork-Kerry in 2016-17.

Methods: Following ethical approval, a random sample of 8-year-old children in Cork-Kerry were examined for dentinal caries in primary teeth (d3vcmft(cde)). Parents completed demographic and oral health behaviour questionnaires. Children were categorised as having lifetime or no exposure to CWF (Full-CWF/No-CWF). Multi-variable regression (negative binomial Hurdle model) assessed the association between CWF, socio-demographic variables, dental visiting, infant feeding, dietary and toothbrushing behaviours and caries prevalence (proportion with d3vcmft(cde) > 0) and severity (mean d3vcmft(cde) among children with caries). Significance level was $P < 0.05$.

Results: Of 1521 8-year-olds examined for caries, 375 (25%) with Full-CWF and 770 (51%) with No-CWF were included in the analysis. Having Full-CWF (vs. No-CWF) was associated with lower caries prevalence (56% Full-CWF vs. 65% No-CWF, $P = 0.001$) and severity (mean d3vcmft(cde) 3.7 Full-CWF vs. 4.2 No-CWF, $P = 0.002$). Brushing with toothpaste once/day or less (vs. twice/day or more), using a glass to rinse after toothbrushing (vs. other rinse method/no rinsing), having sweet foods/drinks more than once/day between meals (vs. once/day or less), having regularly taken a baby bottle into bed and having visited the dentist (vs. never) were associated with higher caries prevalence. Medical card ownership, having sweet foods/drinks more than once/day between meals (vs. once/day or less) and having visited the dentist (vs. never) were associated with higher severity of caries.

Conclusions: In primary teeth of 8-year-old children, CWF at 0.6 to 0.8 ppm was associated with lower prevalence and severity of dentinal caries. Socio-demographic and modifiable behavioural factors were associated with higher caries prevalence and severity.