THE D3 GROUP

ISSUE #5 MARCH 2018

D3G DISPATCH

News about Developmental Dental Defects (D3s), The D3 Group, and the Chalky Teeth Campaign.

COMMENT FROM THE CUSP

Welcome to our first issue for 2018. We've had an exciting (if not hectic) start to the year and this is set to continue in preparation for upcoming publicity in a prominent academic journal – more on that in the next issue! Newsworthiness aside, this imminent exposure to many new eyes is spurring us to get the **D3G** and **Chalky Teeth** websites spruced up ahead of time. So, as the updates emerge over the next few weeks, we'll value your feedback please.

D3G has always been about creating a better environment for research – specifically by **(1)** identifying key research needs and questions; **(2)** assembling strong research teams and networks; and **(3)** advocating about the under-recognised gravity of D3 problems and need for commensurate levels of research funding. Given D3s are a worldwide problem, it's wonderful to see the growing number of internationals joining our D3 family as **friends** and **subscribers** – so thanks to you and all other new arrivals!

And continuing the scientific vein, you'll find we've tailored the item about Molar Hypomin prevalence towards those who've told us they're happy to have to think a bit!

Mike Hubbard | *D3G Founder*

REPORT: Networking with ANZSPD, ADA and industry

Already 2018 has seen D3G mingling with Australian and New Zealand Society for Paediatric Dentistry (**ANZSPD**) conference delegates, meeting jointly with two branches of the Australian Dental Association (**ADA**), and lecturing at the Australian Dental Industry conference (**ADX18**).

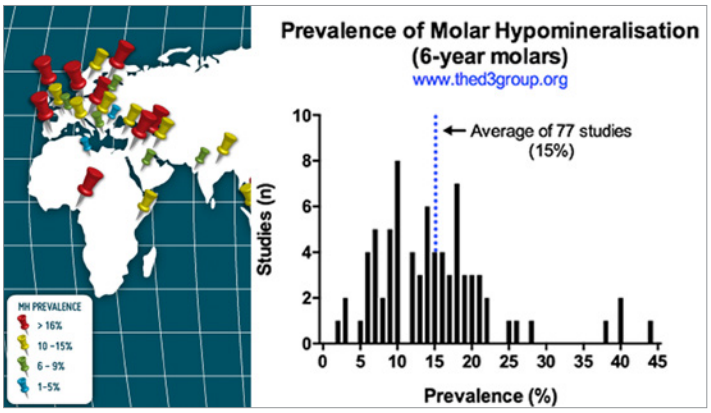
Following a recent tradition *(see **News** November 2015 and March 2017)*, ANZSPD again kindly shouted a "D3G table" at their aquatically-flavoured meeting on Queensland's Gold Coast. This networking opportunity was much appreciated as it prompted helpful feedback about emerging and ongoing projects plus allied funding quests. And most pleasingly, a bunch of new subscribers signed up, making our **membership map** look much busier!

In January, **Abby Corrigal** *(ADA New South Wales)* kindly travelled from Sydney to join **Matt Hopcraft** and **Caroline Kaur** *(ADA Victoria)* and **Mike Hubbard** to discuss ways to promote the **Chalky Teeth Campaign** across ADA's membership and the public. Broadening D3G's exposure in continuing-education events, including at last week's massive ADX tradeshow in Sydney, was one of several plans hatched. Our thanks to ANZSPD, ADA-Vic, ADA-NSW and ADX for their support.

ANZSPD's wonderful congress ("Fissures and Seals") was held at Sea World on Australia's Gold Coast.

UPDATE: 1-in-6 kids have Molar Hypomin – still!!

You may recall we used the slogan "***1-in-6 kids have hypomineralised 6-year molars***" to launch our Chalky Teeth Campaign in 2013 *(see **media release**)* – this referenced an average prevalence of 16% across the 42 studies then depicted on our "**world map of Molar Hypomin**". In 2015, average prevalence across 59 studies stood unchanged at 16%.



And now, a further 18 studies on, we can report the average remains almost the same at 15%. This latest update includes 4 new countries *(giving 36 in total)*, amongst which Mexico stands out as neighbour to the USA which perplexingly still lacks any prevalence data. Regards variations between studies, our updated "bar graph" *(pictured)* reveals little change with range extending from 2% to 44% and most action still happening between 6% and 22% prevalence. Asking "***why such heterogeneity?***", a harder look at the **tabulated data** reveals a cloudy picture.

For example, the 6 new studies from India broaden its range *(2%-14% across 9 studies)* but leave this country with a relatively low average *(8%)*. Mittal's studies of 3 different Indian regions gave equivalent prevalences *(6%, 7%, 7%)*, supporting the idea that some heterogeneity reflects investigator-related differences. Likewise, two new reports from Brazil bring its average prevalence to 22% over 5 studies, thereby making the first report in 2009 *(40%)* seem anomalous. However, a third study from Bosnia-Herzegovina adds to the highly consistent findings made there by 3 different groups over a decade *(12%, 13%, 12%)*, suggesting other factors contribute to heterogeneity seen elsewhere.

Like others, we think methodological standardisation deserves more attention. Further, it seems high time that reasons behind the heterogeneity are pursued more aggressively through study design.

INTRODUCING: Ola Al-Batayneh, D3G's first overseas member

The introductory briefs on our **international ambassadors** *(see preceding two issues)* drew positive feedback and so we've decided to continue this item by featuring other members of our 'D3 family'. Today we happily introduce **Ola Al-Batayneh** who not only volunteered her support for D3G when we first met at IADR-San Francisco a year ago, but also was the first **International Friend** to "sign up" when our **individual membership** became available.

As it happens, Ola has a long association with D3s and "**the land Down Under**" having done her specialist training in paediatric dentistry at Australia's University of Queensland under famed D3 researcher, **Kim Seow**. Since returning to her home country Jordan, Ola has pursued a **clinical-academic career** and **published widely**. Her longterm awareness of Molar Hypomin prompted multiple conference presentations plus 3 ongoing research projects at **Jordan University of Science and Technology**. Ola looks forward to working with Jordanian and regional colleagues to increase awareness of "the chalky molar problem" and D3G across the Middle East. **Contact Ola**.

NEW: A social impact infographic

Thanks to **Sharon Dunn** our long-serving graphic designer, D3G now has a smart infographic portraying "key numbers" associated with our goals and activities *(see our new Social Impact page **here**)*. Why is this important?

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Simply put and reflecting our **philanthropic origins** and **humanistic mission**, D3G strives to do good for the world through our unique blend of translational research, education and advocacy – in other words, we aim to create "**social impact**" by targetting the public, the healthcare sector, and the medico-dental research community. When reflecting on the efforts put in and seeking funds to do great new things, it's important to be able to quantify impacts already made across the target groups. Before now, we've used a text-based "**brag sheet**" to relay our progress – this remains a good backup to the infographic for those wanting a bit more explanation. Comments welcomed – **contact Sharon.**

QUICK QUIZ: Delving into D3s

QUESTION 1 *(easy)*
Toothache in a 6-year-old could be due to Molar Hypomin – true or false?

QUESTION 2 *(harder)*
Is enamel hypomineralisation a secretory or post-secretory developmental defect?

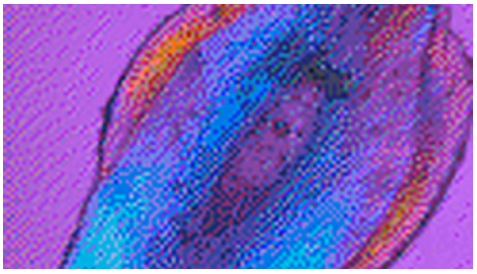
Answers: *see Suggestions Box on pg 4.*

D3 LITERATURE: Keeping you current!

Clinical Feature: D3s and caries experience in 6-year molars

In D3G's very first clinical report (***News, 2008***), we featured **Peter Arrow's** benchmark **study** showing that 22% of Western Australian children had hypomineralised 6-year molars *("6s")*. The long-awaited 8-year-follow-up study has now been published, providing a rare longitudinal perspective on dental and emotional burdens suffered by "D3 kids". Unsurprisingly, many children weren't available for reexamination but several DDE-related observations still reached statistical significance. Regards Molar Hypomin, caries risk was found to parallel the number of affected 6s and to also be higher in those who'd previously had decayed deciduous *(baby)* teeth. Curiously, demarcated opacities alone were not significantly associated with caries risk in 6s yet a strong trend was observed at all-teeth level – several explanations were offered including the possibility that these children experienced more-intensive preventive care because their lesions were relatively mild. Quality of life, as reported by the child, was negatively impacted by caries status but not by D3s *(read more **here**)*.

Lab Feature: Imaging demarcated opacities



We guess that many clinicians would "**give their eye teeth**" for a diagnostic *(or prognostic)* system that accurately predicts the lifecourse of demarcated opacities, the defining pathology of Molar Hypomin – for example, is the lesion mild enough to warrant a preventive strategy, or is it going to break down and require restorative intervention, and if so when? Melbourne PhD student, **Karla Gambetta-Tessini**, took a step towards this lofty goal by comparing the results of two imaging systems, QLF and microCT, in laboratory conditions. The microradiographic *(CT)* approach was judged to give useful associations between physical properties *(mineral density, porosity)* and clinical appearance *(colour)* of enamel opacities, and also revealed hypomineralisation of underlying dentine. The quantitative fluorescence approach yielded similar (but independent) differences in enamel, leading to the conclusion that clinical utility could emerge following further investigation *(read more **here**)*.

Other New Reports: *Spotlighting MH and DDEs*

Dentists' perception, knowledge, and clinical management of molar-incisor-hypomineralisation in Kuwait: a cross-sectional study. Alanzi A, Faridoun A, Kavvadia K, Ghanim A. *BMC Oral Health. 2018;* 18(1):34. PMID: 29514684

Foetal, neonatal and child vitamin D status and enamel hypomineralization. van der Tas JT, Elfrink MEC, Heijboer AC, Rivadeneira F, Jaddoe VWV, Tiemeier H, Schoufour JD, Moll HA, Ongkosuwito EM, Wolvius EB, Voortman T. *Community Dent Oral Epidemiol. 2018;* [Epub ahead of print]. PMID: 29493792

Degree of severity of molar incisor hypomineralization and its relation to dental caries. Negre-Barber A, Montiel-Company JM, Catalá-Pizarro M, Almerich-Silla JM. *Sci Rep. 2018;* 8(1):1248. PMID: 29352193

Global burden of molar incisor hypomineralization. Schwendicke F, Elhennawy K, Reda S, Bekes K, Manton DJ, Krois J. *J Dent. 2018;* 68:10-18. PMID: 29221956

Bonding strategies for MIH-affected enamel and dentin. Krämer N, Bui Khac NN, Lücker S, Stachniss V, Frankenberger R. *Dent Mater. 2018;* 34(2):331-340. PMID: 29208311

Rethinking isolated cleft lip and palate as a syndrome. Koruyucu M, Kasimoğlu Y, Seymen F, Bayram M, Patir A, Ergöz N, Tuna EB, Gencay K, Deeley K, Bussaneli D, Modesto A, Vieira AR. *Oral Surg Oral Med Oral Pathol Oral Radiol. 2018;* [Epub ahead of print]. PMID: 29500156

Relationship between caries experience and demarcated hypomineralised lesions (including MIH) in the permanent dentition of 15-year-olds. Kühnisch J, Kabary L, Malyk Y, Rothmaier K, Metz I, Hickel R, Heinrich J, Manton D, Standl M. *Clin Oral Investig. 2017;* [Epub ahead of print] PMID: 29224062

A novel quantitative light-induced fluorescence device for monitoring molar-incisor hypomineralization. Durmus B, Durhan A, Gökkaya B, Kıtıki B, Yanıkoğlu F, Kargül B. *Niger J Clin Pract. 2017;* 20(1):71-76. PMID: 27958250

Are Hypomineralized Primary Molars and Canines Associated with Molar-Incisor Hypomineralization? da Silva Figueiredo Sé MJ, Ribeiro APD, Dos Santos-Pinto LAM, de Cassia Loiola Cordeiro R, Cabral RN, Leal SC. *Pediatr Dent. 2017;* 39(7):445-449. PMID: 29335050

The Impact of Molar-Incisor Hypomineralisation on Dental Caries in Permanent First Molars: A Prospective Cohort Study. da Costa Silva CM, Ortega EMM, Mialhe FL. *Oral Health Prev Dent. 2017;* 15(6):581-586. PMID: 29319065

Efficacy of desensitizing products containing 8% arginine and calcium carbonate for hypersensitivity relief in MIH-affected molars: an 8-week clinical study. Bekes K, Heinzelmann K, Lettner S, Schaller HG. *Clin Oral Investig. 2017;* 21(7):2311-2317. PMID: 28004247

The Effect of Casein Phosphopeptide-Amorphous Calcium Phosphate on Molar-Incisor Hypomineralisation: A Pilot Study. Bakkal M, Abbasoglu Z, Kargul B. *Oral Health Prev Dent. 2017;* 15(2):163-167. PMID: 28322360

Disruption of Steroid Axis, a New Paradigm for Molar Incisor Hypomineralization (MIH). Babajko S, Jedeon K, Houari S, Loiodice S, Berdal A. *Front Physiol. 2017;* 26;8:343. PMID: 28603502

Molar incisor hypomineralization in HIV-infected children and adolescents. Andrade NS, Pontes AS, de Sousa Paz HE, de Moura MS, Moura LF, Lima MD. *Spec Care Dentist. 2017;* 37(1):28-37. PMID: 27791275

A systematic review on the association between molar incisor hypomineralization and dental caries. Americano GC, Jacobsen PE, Soviero VM, Haubek D. *Int J Paediatr Dent. 2017;* 27(1):11-21. PMID: 27098755

For more MH reports go here >

Association between developmental defects of enamel and celiac disease: A meta-analysis. Souto-Souza D, da Consolação Soares ME, Rezende VS, de Lacerda Dantas PC, Galvão EL, Falci SGM. *Arch Oral Biol. 2018;* 87:180-190. PMID: 29306074

Dental Caries and Developmental Defects of Enamel in the Primary Dentition of Preterm Infants: Case-Control Observational Study. Schüler IM, Haberstroh S, Dawczynski K, Lehmann T, Heinrich-Weltzien R. *Caries Res. 2018;* 52(1-2):22-31.PMID: 29224001

Prevalence and extent of enamel defects in the permanent teeth of 8-year-old Nigerian children. Ibiyemi O, Zohoori FV, Valentine RA, Kometa S, Maguire A. *Community Dent Oral Epidemiol. 2018;* 46(1):54-62. PMID: 28895192

Significance of genetic variations in developmental enamel defects of primary dentition in Polish children. Gerreth K, Zaorska K, Zabel M, Nowicki M, Borysewicz-Lewicka M. *Clin Oral Investig. 2018;* 22(1):321-329. PMID: 28382465

Developmental defects of enamel and dental caries in the primary dentition: A systematic review and meta-analysis. Costa FS, Silveira ER, Pinto GS, Nascimento GG, Thomson WM, Demarco FF. *J Dent. 2017;* 60:1-7. PMID: 28347809

Developmental defects of enamel in first permanent molars associated with use of asthma drugs in preschool aged children: A retrospective case-control study. Mastora A, Vadiakas G, Agouropoulos A, Gartagani-Panagiotopoulou P, Gemou Engesaeth V. *Eur Arch Paediatr Dent. 2017;* 18(2):105-111. PMID: 28255932

Dental enamel defects, caries experience and oral health-related quality of life: a cohort study. Arrow P. *Aust Dent J. 2017;* 62(2):165-172. PMID: 27539008

SUGGESTIONS BOX

In D3 family spirit, please **contact us** to share your thoughts on how we might improve this newsletter and other communications.

Answers to quiz:
Q1: True *(more about this **here**)*

Q2: Hypomineralisation is post-secretory *(hypoplasia is secretory)*. Read about it **here.**

Towards better understanding and care of people with D3s.