Letters to the editor

Send your letters to the Editor, *British Dental Journal*, 64 Wimpole Street, London, W1G 8YS. Email bdj@bda.org. Priority will be given to letters less than 500 words long. Authors must sign the letter, which may be edited for reasons of space.

Technology

Artificial intelligence

Sir, artificial intelligence (AI) has been used in a variety of ways in healthcare. These include detecting gastric cancer in endoscopic images, estimating the impact of human papillomavirus types in influencing the risk of cervical dysplasia recurrence, classifying skin cancer, identifying microbial volatile organic compound signatures, detection of fractures, and many more.

AI can serve as a useful modality in diagnosis and treatment of lesions of the oral cavity and can be employed in screening and classifying suspicious altered oral mucosa undergoing premalignant and malignant changes. The advantage would be no observation fatigue, and even minute changes at single pixel level can be detected which might go unnoticed by the naked eye. The analysis of omics data and individual medical profiles by AI might accurately predict a genetic predisposition for oral cancer for large populations. Further, personalised medicine, long-term treatment outcomes, recurrences and survival of oral cancer patients might be specifically calculated by AI algorithms. With respect to resection surgery, the intraoperative pathological diagnosis would be real-time and the margin accuracy might be comparable to or even better than that of frozen sections, as hypothesised by Zhang *et al.*¹

Analogous to the findings of Palma *et al.*,² AI might detect oral microbial volatile organic compound signatures which has potential applications in oral microbiology and periodontal medicine practice. AI when integrated with endodontics, might bio-mechanically prepare the root canals with precision. The analysis of digital slides by AI might result in more accurate detection of occult metastasis and comparative analysis

of immunohistochemistry and other techniques. More importantly, subjective and observer bias might be eliminated as perceived in the diagnosis of epithelial dysplasia. Digital imaging methods integrated with AI might improve radio-diagnosis and reduce observer fatigue.

Incorporation of AI in teaching and learning process can dramatically improve the way student perceive knowledge. AI can contribute from the designing of meaningfully differentiated curriculum to error free evaluation pattern (humans are sometimes biased). Future AI-based dental education can significantly reduce the cost of education and burden on educators.

*B. Majumdar, S. C. Sarode, G. S. Sarode, India
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Big data is or big data are

Sir, thank you for your recent, excellent editorial in the *BDJ* on 'Data is or data are?' This has been a vexed issue for me as an advisor for many an undergraduate and postgraduate student over the years. At least there seems to be clarity now...or is there?

This aside, I believe it is pertinent to mention another 'data' issue that will dictate our science, and perhaps life, in the not too distant future. That is 'BIG DATA'.

With the exploding advances in technology, especially on the many 'omics' fields (eg microbiomics, metabolomics, interactomics) derived through miniaturisation of bench research, this is leading to a data explosion with each experiment spewing out reams of data needing to be interpreted by experts

in informatics sciences. The results of these studies are revolutionising medicine as we speak.

On the other end of the spectrum is the big data in social sciences led by psychometric analyses, which could be weaponised for the good or, indeed, the bad of the society à la the 'Cambridge Analytica' saga.

Clearly, big data is/are(!) bound to permeate our health, lives and lifestyles, and this is just the beginning of a new societal revolution!

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Dental education

Unwanted sixth-formers

Sir, I am a consultant anaesthetist whose daughter has been through the application process for dentistry this year.

All of the dental schools insist on work experience, frequently a minimum number of days, before an application will be considered. While I totally agree with the importance of this, I wonder if you realise how difficult it is to achieve. In my experience, polite enquiries from sixth-formers and their parents to dental practices are routinely ignored if in writing, or declined if in person, usually with 'We don't take them any more', 'it's against our policy', 'the health and safety rules/paperwork are too complicated...' or 'it's boring for them'.

My daughter only got the required work experience because I intervened, asking friends of friends, sending out pleas on social media, being a 'pushy parent' etc. Even so, I struggled to find the two weeks required by Manchester, and despite us living within a short distance of dozens of dental practices, she travelled up to 50 miles to the ones that could be persuaded to take her. Chatting to

other parents at dental school interviews confirms that this is a common experience.

If this is a such a challenge for a middle-class family with lots of useful contacts, a parent who is prepared to be pushy, and a student with access to a car, what hope is there for a sixth-former whose parents did not go to university, and/or are less supportive, and/or do not have appropriate contacts/travel options? These students must be seriously disadvantaged in the application process.

In the large district general hospital where I work, all of the many sixth-formers who enquire about work experience for medicine are offered a week's placement if they attend a local school and the headteacher confirms that medicine is a realistic option for them. Surely there is some way that work experience for dentistry could have a similar system?

In the meantime, could I ask that the dental community is a little more open to being observed by your future colleagues?

R. Walpole, by email

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Paediatrics

Breastfeeding and dental health

Sir, I note with interest of the news that the British Society of Paediatric Dentistry (BSPD) produced a position statement on infant feeding in early 2018.¹ One of the recommendations arising out of the position statement is that 'Consideration should be given to reducing on-demand and night-time feeds in light of the emerging evidence-base suggesting a potential link between these practices and complementary feeding after 12 months of age and dental decay'.²

Currently, the World Health Organization (WHO) recommends exclusive breastfeeding for six months and continued breastfeeding along with appropriate complementary foods up to two years or beyond.³ This BSPD position statement seems to undermine the WHO guidelines and may cause confusion to health professionals and mothers. To clarify the position, the UNICEF UK Baby

Friendly Initiative issued a statement in March 2018.⁴

This is followed by another statement issued by Public Health England in April 2018. Public Health England believes that there is no evidence that from 12 months of age reducing breastfeeding on demand and at night time will result in the prevention of tooth decay.⁵

*C. A. Yeung,
Lanarkshire*

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Hall technique reviewed

Sir, we read with interest the recent publication by Roberts *et al.*¹ We recently surveyed a group of dentists to establish what experience they had in using Hall Technique preformed metal crowns (HTPMC) and any perceived barriers to their use. Of the 90 respondents (70 foundation/core training dentists [DFT/DCT]; 20 GDPs, 3–44 years post-qualification), over 80% had been trained in the use of HTPMC; however, only 16% had placed one in the previous 12 months. Emerging themes regarding limited use related to limited availability of crowns/funding and limited level of confidence/experience with the technique. Roberts *et al.*¹ also cited this latter factor.

In our study only 40% of DFT/DCTs reported they had access to PMCs. This is disheartening given PMC placement is part

of the foundation training curriculum and a requirement for completion of foundation training.² HTPMC call upon practitioners to seal in caries where traditionally it was removed,³ a concept that requires confidence and skill in a different approach. In our survey, some were unclear about 'how much decay to remove' which demonstrated a lack of familiarity with HTPMC.

Cost was another barrier that emerged from our survey. Respondents felt that the current Units of Dental Activity at Band 2 in England and Wales did little to encourage use of the technique. In Scotland, where a fee-per-item system remains, the number of PMCs placed almost quadrupled between 2005–6 and 2015–16, rising from 2,746 to 10,711.⁴ A recent study indicated a mean positive cost difference of £45.20 in favour of HTPMC when compared to conventional caries management.⁵

In conclusion, both Roberts *et al.*¹ and our survey, in different practitioner groups, suggest similar barriers to HTPMC use across the dental fraternity. Issues relating to further training, PMC availability and funding need to be addressed to ensure that patients can receive evidence-based management for carious primary molars in all settings.

*K. O'Donnell, G. Yesudian, F. Soldani,
by email*

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