COMMENT

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 biomechanically 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 improvise 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.

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1. Zhang J, Song Y, Xia F *et al.* Rapid and accurate intraoperative pathological diagnosis by artificial intelligence with deep learning technology. *Med Hypotheses* 2017; **107:** 98–99.
2. Palma S I, Traguedo A P, Porteira A R, Frias M J, Gamboa H, Roque A C. Machine learning for the meta-analyses of microbial pathogens' volatile signatures. *Sci Rep* 2018; **8:** 1–15.

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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

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