

Ten years of *BDJ Open*: reflections on a decade of transformation in dentistry

By Manas Dave¹

I still remember the day *BDJ Open* was launched in 2015 as a bold new venture in dental publishing.¹ In ten short years, I've watched *BDJ Open* grow into a thriving international journal that has truly supported accessible, high-quality research across all areas of dentistry. This ten-year anniversary is not only a celebration of the journal's success, but also a reflection on how dramatically the landscape of dentistry has evolved in the past decade.

From day one, *BDJ Open*'s mission was clear: open access, fast turnaround times, reputation, visibility, article-level metrics and no format limits.² Ultimately, the journal was to be a home for dental research of every discipline. This ethos of accessibility has only grown more important over time. Today, as we stand on the cusp of an AI-driven information age, that founding vision – 'open research...for the benefit of the wider dental community'¹ – feels more important than ever. I'm excited to share some personal reflections on the major research that has defined dentistry's progress in the last ten years and how our journal has played a key role in each.

The genetic revolution in oral health

Ten years ago, genomics was only beginning to make its mark in dentistry. Whole-genome sequencing was still costly and confined mostly to advanced research centres. Fast forward to today and the cost of sequencing the human genome has plummeted to a few hundred pounds.³ The accessibility of sequencing technology has empowered researchers worldwide and *BDJ Open* has proudly provided a platform for many genetic studies in dentistry.

One of the early breakthroughs I recall was seeing manuscripts that leveraged next-generation sequencing to gain a deep dive into dental anomalies. For example, amelogenesis imperfecta, a rare hereditary enamel disorder, was traditionally diagnosed by clinical appearance and family history. In 2023, a team from Thailand used genomics to gain novel insights into this condition. An article was published identifying novel ITGB6 gene variants as the causative mutation in a child with enamel defects.⁴ Using modern DNA sequencing (trio exome and Sanger sequencing), they discovered a compound heterozygous mutation in the ITGB6 gene that explained the patient's hypoplastic, fragile enamel and even an unusual taurodontism (enlarged pulp chambers) in the molars. This study also connected the genetic mutation to the observed radiographic features, expanding our understanding of the genotype-phenotype spectrum of amelogenesis imperfecta.

BDJ Open has showcased many such international contributions. I think of the 2022 case from South Africa reporting the first known SFRP4 gene mutation causing Pyle's disease (a rare bone disorder) in an African child.⁵ The authors didn't just identify the mutation through sequencing, they also detailed the patient's craniofacial features and dental challenges (such as delayed tooth eruption and taurodontism), alerting dentists to the oral manifestations of this condition.

Genetic research in dentistry hasn't been limited to rare disorders; it's also opening doors to precision medicine and understanding common diseases. Over the decade, we saw an explosion of 'omics'

research (genomics, transcriptomics, proteomics, metabolomics etc) aiming to provide insights that were not possible before. Yet a striking trend, especially in low- and middle-income countries, has been the gap between research and practice. A 2024 *BDJ Open* review by colleagues in South Africa reflected on 'bridging the gap' between omics discoveries and dental clinics. The review summarised recent genetic breakthroughs, from identifying gene markers for oral cancers to unravelling the oral microbiome and discussed why these advances aren't yet routinely available in clinics such as limited infrastructure, cost and education, especially in emerging economies.⁶ I found this narrative especially powerful. It captured the very essence of what the last ten years have been about; incredible scientific progress and identifying the importance of translation into clinical practice across the world.

Championing primary research and evidence-based practice

If genetics has revolutionised the 'what' of dental science, primary research is the engine that drives 'how' we advance clinical practice. From day one, *BDJ Open* emphasised the importance of robust primary studies, whether clinical trials, epidemiological surveys or laboratory experiments and making those findings freely accessible to inform evidence-based dentistry. Over the last decade, dentistry has increasingly embraced evidence-based practice and open access primary research has been key in that movement. I've been delighted to see *BDJ Open* not only publish high-quality research but also influence how dentists around the world make decisions in their clinics every day.

One area where primary research has flourished is in identifying risk markers and diagnostic tools for oral disease. For instance, a recent study from Egypt explored salivary biomarkers for the potential malignant transformation of oral lesions. The authors measured levels of microRNA molecules in the saliva of patients with oral lichen planus and healthy controls. The result



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« showed two microRNAs, miR-93 and miR-412-3p, were found to be significantly elevated in lichen planus patients, suggesting they could serve as non-invasive diagnostic markers.⁷ I can envision how such a salivary test (liquid biopsy) might be commonly available in the near future to monitor patients with oral diseases.

BDJ Open has also been a platform for fundamental research that underpins clinical innovation. A great example is the work on dental stem cells and regenerative techniques. In 2024, a team from Thailand published a laboratory study on periodontal ligament stem cells, the cells that help attach tooth to

such issues to light, this primary research is informing policy discussions on the role of dental clinics in public health outreach. For me, it was heartening to see *BDJ Open* provide a forum for such an important topic. It also speaks to the journal's breadth, covering everything from molecular biology to social determinants of health.

The COVID-19 pandemic was perhaps the ultimate test of evidence-based practice and *BDJ Open* rose to the challenge by disseminating primary data on the pandemic's impact on dentistry. In 2020, amid global shutdowns, we published a study on Egyptian dentists' experiences and fears

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bone and have huge potential in regenerative therapy. They experimented with activating these stem cells using the Jagged-1/Notch signalling pathway and then profiled the changes in microRNA expression.⁸ Their data revealed 26 microRNAs that were altered when the cells were stimulated to differentiate. This offers insights into how we might be able to manipulate these stem cells to regenerate lost periodontal tissue. The authors concluded that understanding these microRNAs could aid the development of targeted regenerative materials; imagine tailor-made therapies to regrow bone or periodontal ligament as a treatment for periodontal disease!

Crucially, our commitment to primary research also extends to public health and clinical care studies that directly impacts communities. Dentistry in the last decade has broadened its scope from the dental chair to the wider social context of patients. One example was a 2024 pilot study from the UK examining how dental teams can identify and support patients facing food insecurity.⁹ As economic hardship and nutrition intersect with oral health, the researchers (led by colleagues in Liverpool, UK) explored dentists' opinions on screening for food insecurity in dental settings. The study found that many dental professionals are encountering undernourished or food-insecure patients and generally felt a responsibility to help, but they cited barriers such as lack of training and time. By bringing

related to COVID-19.¹⁰ The authors reported high levels of anxiety among clinicians, concerns over aerosol transmission and changes in infection control practices. Such research can help both dental and non-dental communities across the world to understand the frontline challenges. It struck me then that our decision to be open access proved invaluable, critical information was not locked behind a subscription during an unprecedented crisis. The pandemic taught us that timely, open evidence can literally shape how an entire profession responds to an emergency.

The rise of artificial intelligence and machine learning

No reflection on the past decade would be complete without discussing the rise of artificial intelligence (AI) and machine learning (ML) in dentistry. In 2015, 'AI in dentistry' might have sounded like science fiction but by 2025, it is very much our reality. From AI-powered diagnostic tools in radiology to machine learning algorithms predicting disease risk, to intelligent systems aiding administrative tasks, this transformation has been and will continue to be rapidly evolving. I have to admit a personal fascination with this area; as the years passed, I found myself handling more submissions that involved neural networks or big data than I ever imagined when I first joined the editorial team.

One of the early AI studies that we published back in 2021 was from a multinational team that used machine learning methods to predict 90-day hospital readmission risk for dental patients.¹¹ At first glance, that idea was unconventional; hospital readmission isn't traditionally a dental metric. The authors used a national database to train a machine learning model to find patterns among patients who had been hospitalised for dental issues (such as severe infections). The outcome was that authors achieved predictive models for which dental patients were most likely to return to hospital after discharge. The study found factors such as older age and greater medical comorbidities significantly increased readmission risk and it suggested that better discharge planning for high-risk dental patients could save substantial amounts in healthcare costs. Beyond the specific findings, the message was clear: machine learning can draw useful insights from big datasets in dentistry, potentially improving how we manage high-risk patients.

Of course, with rapid innovation comes the need for reflection and sometimes caution. A noteworthy contribution this year (2025) has been a *BDJ Open* review titled 'Concerns regarding deployment of AI-based applications in dentistry'. Written by authors from Pakistan, it provides a discussion on the AI revolution, discussing issues of algorithm bias, data privacy, and the ethical and legal implications of AI in patient care.¹² The review also emphasises that AI should assist, not replace, the clinical judgement of dentists. A reminder that however smart the technology gets, dentistry remains fundamentally a human-centred profession.

Beyond the science: global collaboration and new frontiers

Reflecting on a decade of dentistry, not only have technologies and techniques changed but also the professional and global context in which we work. One of the aspects of *BDJ Open* I treasure most is how it has brought together voices from around the world, showcasing the diversity of dental research and the common challenges we face. Over ten years, we have published studies from nearly every continent, an ongoing conversation between high-income and low-income countries, between specialties and between academia and clinical practice. This international mosaic of research is ►►

◀ itself a theme worth celebrating, as it has enriched our understanding of oral health beyond any single country's perspective.

Dental caries, periodontal disease and oral cancer do not respect borders. It has been illuminating to see how different regions approach similar problems. For example, several papers from Asia and Africa highlighted the burden of oral diseases in their populations and innovative strategies to address them. The same is also true for dental education. A study from India explored dental anxiety among dental students, finding surprisingly high anxiety levels even in those training to be dentists, a reminder that mental health in our profession is a global concern, starting right at the educational level.¹³ From numerous countries around the world, authors have shared how local cultural, economic and systemic factors influence outcomes, whether it's the prevalence of early childhood caries or attitudes toward orthodontic treatment. Each of these contributions has broadened our collective outlook, and being open access, the findings travel far. A researcher in Kenya can learn from a study in Brazil, and vice versa, without barriers.

Looking ahead: *BDJ Open* and the future of accessible knowledge

With AI systems such as advanced language models now able to analyse literature at lightning speed, knowledge flows more freely than ever. A student can ask an AI assistant about the latest techniques for caries detection and (ideally) get an answer sourced from high-quality research in a

matter of seconds. However, this scenario only works if that underlying research is accessible and trustworthy. This is where I see *BDJ Open*'s future mission. In a world of information abundance and unfortunately, misinformation, ensuring free access to rigorous, peer-reviewed dental science is absolutely essential. Open access journals like *BDJ Open* provide the foundation of reliable knowledge that both humans and AI can draw upon.

In the coming years, I anticipate *BDJ Open* will continue to publish impactful clinical, genetic and computational research. We'll likely see more on AI in diagnostics, robotics in surgery, CRISPR gene-editing for oral diseases, salivary transcriptomics for systemic disease screening and innovations we haven't even predicted yet. We will also continue to shine a light on the social and preventative dimensions of oral health because the heart of dentistry remains caring for people, one mouth at a time. Whether it's a novel policy to reduce sugar consumption or a community programme to expand dental care access, if it's backed by data and rigour, it has a place in our journal.

On a personal note, as I reflect on this ten-year milestone, I feel a deep sense of gratitude and excitement. Gratitude to the countless authors, reviewers and editors who have contributed to *BDJ Open*'s success. It truly is a collaborative effort spanning the globe and excitement being part of the editorial team and having the opportunity to first-hand see the research coming through that will shape our future profession. I am honoured to be part of this journey and excited to see what we will achieve together. ■

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BDA UPDATE

British Dental Association (the 'Company') (Registered in England and Wales with company number 14161) Annual General Meeting

NOTICE IS HEREBY GIVEN that the Annual General Meeting of the British Dental Association will be held remotely at 19:30 on Wednesday 25 June 2025, for transaction of the following business:

1. To receive and consider the audited accounts for the financial year ended 30 September 2024 including the Directors' and auditors' reports, as made available on the BDA website
2. To reappoint BDO Stoy Hayward, LLP ('BDO') as the company's auditors to hold office until the next Annual General Meeting

- and to authorise the Directors to fix their remuneration
3. To consider and, if thought fit, approve, as a special resolution of the members of the Company, the adoption of the draft articles of association posted on the BDA website as the articles of association of the Company with immediate effect in substitution for and to the entire exclusion of the existing articles of association.
4. To elect Callum Youngson as President of the Association for 2026–2027

5. To confirm the date and venue for the Annual General Meeting in 2026 as determined by the Principal Executive Committee.

All documents are available to view on the BDA website along with details regarding proxy voting.

DATED 23 May 2025

BY ORDER OF THE PRINCIPAL EXECUTIVE COMMITTEE

Registered office: 64 Wimpole Street, London, W1G 8YS

