EDITORIAL

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Innovations for a more inclusive dentistry

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Often, and especially nowadays, the intensity of professional practice often surprises us at philosophical crossroads, where market demands seem to contradict our vocation for service. Moreover, scientific research does not escape these ambiguities, as the pressure to produce new findings often outweighs their true relevance.

Within these discussions, we sometimes lose sight of the reason for our purpose as promoters and providers of health. The paths that lead toward the ultimate goal of achieving universal oral health solutions become blurred by the details of the journey, diverting us toward unplanned destinations.

Small deviations can cause dentistry to invert its priorities, becoming less inclusive and reducing both its impact and its potential for widespread reach. Yet, at some point, it is the market itself that depends on accessibility for its own survival. Even innovations initially available only to a segment of the population (for example, dental implants) have gradually been incorporated into social security programs, allowing more people to benefit from them.

As was the case with the development of adhesive techniques (1) and dental implantology (2), recent decades have witnessed a paradigm shift in dental science, with digital dentistry and the applications of artificial intelligence (AI) as its key pillars. In this context, as with any innovation that challenges established systems, adapting to new frameworks of thought inevitably brings resistance. Nevertheless, this change should be seen as a challenge for researchers to evaluate —through the lens of science— those developments that show real potential for a positive impact in achieving the goal of universal oral health.

In 2018, we discussed in another editorial (3) on the reasons why the discipline of Dentistry for Patients with Disabilities and Medical Risk (Special Care Dentistry [SCD]) seemed unattractive to graduates of our undergraduate programs. That analysis concluded that the limited exposure of students to clinical situations involving special-needs patients not only reduced empathy

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but also diminished their interest in seeking comprehensive alternatives for a more inclusive dentistry. In the same text, it was emphasized that this discipline must remain aligned with the fast-moving train of innovation, which will only lead the profession to its foundational destination if its developments are universally applicable.

Specifically, focusing on the advantages of digital dentistry within SCD, a preliminary review of the literature allows the identification of the following areas of application:

1. **Prosthetic rehabilitation.** It has been reported that the digital workflow improves efficiency and accuracy in the prosthetic rehabilitation of patients with autism spectrum disorders (ASD), supported by behavior management strategies (4), and of individuals diagnosed with epidermolysis bullosa, whose healing processes must be handled with special care (5).
2. **Orthodontics.** The use of additive manufacturing and computer-aided design and manufacturing (CAD/CAM) systems has proven critical for the manufacturing of appliances in patients with complex medical conditions, such as severe microstomia (6) or Pierre Robin sequence (7).
3. **Advances in diagnosis.** Digital technologies such as 3D facial photography have been used to assist in the diagnosis and management of complex conditions, such as sleep apnea in individuals with Down syndrome (8).
4. **Orofacial protection devices.** Through digital design and manufacturing, mouthguards have been produced for patients diagnosed with ASD who exhibit self-injurious behaviors (4).

In all these cases, there is the potential to shorten working times and to use less invasive resources that facilitate the performance of procedures, treatments that previously were only possible with pharmacological assistance.

On the other hand, the contributions of AI to a more accessible dentistry are still in their early stages. This implies two things: there is still much uncertainty, and the field remains fertile ground for innovation. As we discover and demystify what AI truly is, we find ourselves immersed in a sea of unimaginable possibilities. For instance, predictive tools have been developed for the diagnosis of oral cancer using images captured with a smartphone camera (9).

In line with this, Ducret et al. (10) discuss the advantages and disadvantages of AI in reducing inequities in access to oral healthcare, concluding that continuous monitoring of both its positive and negative aspects is necessary to ensure that the positive outweigh the negative. In this regard, the use of resources such as ChatGPT® opens the door to designing virtual cases that address ethical concerns regarding the use of personal data in evaluating and validating research tools. This represents an important step toward removing barriers to research involving patients with complex medical conditions or vulnerable populations.

Ultimately, the invitation is extended to researchers and clinicians, especially to the new generations, to take advantage of this historical turning point offered by the new paradigm and to resume the path toward an effective, inclusive, and widely accessible dentistry.

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